Exhibit 1

Filed Under Seal

Confidential

IN THE UNITED STATES DISTRICT COURT

WESTERN DISTRICT OF TEXAS

SAN ANTONIO DIVISION

Case No. 5:17-cv-967

ROY C. SPEGELE, individually and on behalf of all those similarly situated,

Plaintiff,

v.

USAA LIFE INSURANCE COMPANY,

Defendant.

February 24, 2020

Expert Report of Craig Merrill, PhD

I. Qualifications

I am a Professor of Finance at the Marriott School of Management at Brigham Young University and a research fellow of the Wharton Financial Institutions Center. I received my Ph.D. in Insurance and Finance from the Wharton School of the University of Pennsylvania. Courses at the Wharton School were taught by leading scholars in insurance economics and financial economics as well as by distinguished professionals from the industry. I completed the entire sequence of required courses in both the finance major and the insurance and risk management major areas. My primary area of academic research and publication is the valuation of interest rate contingent securities with applications to derivative pricing, valuation of insurance liabilities, and asset/liability management for insurers.

I coauthored a monograph with Professor David F. Babbel of the Wharton School on financial valuation models that was commissioned and published by the Society of Actuaries and has been required reading in preparation for their certification exams. Some of my academic papers have also been required reading for actuarial certification exams. My academic papers on fair value accounting and liability valuation helped form the theoretical foundation of the American Academy of Actuaries' contribution to developing a fair value accounting system for insurance liabilities. I have also conducted research and published on investment strategy and loss distribution models. My current work investigates the valuation and use of fixed, indexed and variable annuities. I am investigating annuities from the perspective of issuing firms as well as from the perspective of consumers' portfolio decisions.

My consulting assignments (including Goldman Sachs, AIG, Swiss Re, Lazard Frères, The Hartford, New York Life, World Trade Center Properties and others) have involved such projects as two-factor and three-factor bond pricing models; multi-asset return simulation models; compiling a database of intraday Treasury security prices based on the GovPX data feeds; development of international interest-rate and exchange-rate simulation models; and an assessment of liability valuation, asset adequacy and risk for variable annuity products. I have also presented professional seminars on financial pricing of insurance liabilities, risk management, asset/liability management, and mathematical finance.

At the Marriott School, I teach courses on corporate risk management and also on fixed income securities and derivatives in the undergraduate and MBA programs. In these courses, I

teach the valuation tools that are used in valuation and risk assessment for insurance liabilities. I have also taught many executive education courses at the Wharton School of the University of Pennsylvania, as well as courses for Citibank Latin America and other companies in Europe on advanced asset/liability management for insurers. These courses were for chief actuarial officers, partners at accounting firms, actuaries, and other investments professionals. Attendees have represented business interests in at least 30 countries around the world.

All of these research and teaching activities are based on a foundation of financial and economic theory, as well as industry practice. My publication record in quality academic journals includes many articles that are based upon questions, issues, or data that arose from consulting activities. For example, I published an article with David F. Babbel in the Journal of Risk and Insurance that explores common mistakes that have created trouble for insurance companies. My experience working with successful insurance companies provided a good perspective on insurance company management and decision making to make comparisons about common mistakes. This type of exposure qualifies me to comment on insurance company practice informed by financial and economic theory.

A current curriculum vitae is attached (Exhibit 1) as well as a listing of all other cases in which I testified as an expert at trial or by deposition for the past 4 years (Exhibit 2). My compensation arrangement is to be paid my standard rate of $750 per hour. Any compensation I have received or will receive in connection with my work on this case is in no way contingent or based on the contents of my opinions or the outcome of any matter; it is intended only to fairly compensate me for my time. Charles River Associates, an international financial and economics consulting company, has provided research support for my work.

A listing of the materials I have reviewed in connection with this assignment is contained in Exhibit 3 of this report. Information specifically considered in the formation of my opinions are in the citations in the footnotes of this report. While I cite a number of documents as support for statements in this report, my opinions are based upon my professional experience as a professor, researcher, consultant, and testifying expert over the past 25 years. My work is ongoing and I reserve the right to modify or expand upon my opinions should additional relevant information become available or brought to my attention after the date of this report.

II. Assignment

I have been asked by counsel for the Defendant, USAA Life Insurance Company ("USAA Life") to respond to (a) the Class Action Complaint filed on September 29, 2017; (b) Plaintiff's Motion for Class Certification and Memorandum in Support of Motion for Class Certification; (c) the report of plaintiff's expert, Scott J. Witt, dated December 20, 2019; and, (d) the deposition of Mr. Witt taken on January 30, 2020. As part of this analysis, I will discuss relevant characteristics of the USAA Life policies that would be included in the proposed class. The discussion of these policies will encompass economic and practical considerations relevant to USAA Life throughout the lifecycle of a universal life policy – from initial development and pricing through the management of policies that have been sold to policyholders and are in force.

III. Summary of Opinions

1. Mr. Witt's report does not present a reliable method for the calculation of total damages. In fact, his report does not actually contain the full methodology he ultimately testified about in his deposition. His approach is not reliable, is not consistent with plaintiff's claims, and ignores the intra-class conflicts inherent in plaintiff's claims.
2. Plaintiff argues that cost of insurance rates must be calculated using a specific method of estimating the expected payout of death benefits. This approach would not treat existing policyholders in a fair or consistent manner. Plaintiff's claims create intra-class conflicts and questions that require individual inquiries.
3. USAA Life's determination of current cost of insurance rates was, and is, based on the insured's age, sex, and risk classification and on the company's mortality expectations.
4. Contrary to the allegations in the Complaint, USAA Life did lower current cost of insurance rates for its universal life policies as its mortality experience changed.

IV. Discussion of Opinions

I have been asked to evaluate the report submitted by plaintiff's expert, Scott J. Witt. At the core of plaintiff's claims, and Mr. Witt's analysis, is the determination of cost of insurance rates for the UL3 and UL4 policies at issue in this case. Interestingly, UL1 and UL2 policies that were included in the proposed class in the Complaint have now been omitted. I will focus my analysis in this report on the UL3 and UL4 policies.

The policy language regarding cost of insurance rates, for both UL3 and UL4 policies, says:[1]

> The cost of insurance rates for each Specified Amount are based on the insured's age, sex, and rate class. Current cost of insurance rates are based on our expectations as to future mortality experience.

Plaintiff reads this description in a way that is not consistent with the economics of the operation of a universal life insurance policy. Further, plaintiff's reading would create intra-class conflicts that would require individual inquiries to resolve. In addition, Mr. Witt's proposed method of calculating damages is inconsistent with the actual methods used by USAA Life, or any insurance company with which I am familiar, to manage a pool of policies such as those in the proposed class. In fact, in my experience, I have never seen an insurance company use mortality experience directly from a mortality table as the sole basis for setting cost of insurance rates. While the mortality rates may be assumed as a starting point, a more complex actuarial process that considers all of the assumptions associated with a particular product will be used to determine COI rates.

In response to Plaintiff's interpretation of the cost of insurance rates, I observe the following.

1. Plaintiff inserts the word "only" into his restatement of the cost of insurance rate description. I will leave it to the lawyers to parse the language of the policy, but as an economist, I can say that Plaintiff's choice to insert an additional word into the policy language would lead to economically unreasonable results.
2. Plaintiff and his expert interpret "expectations as to future mortality experience" as applying to policyholders on an individual-by-individual basis. That is not consistent with how USAA Life, or any life insurance company with which I am familiar, would determine cost of insurance rates. USAA Life determines cost of insurance rates on a pooled basis for cells of similar policyholders within the context of anticipated lifetime mortality experience.
3. Given that the cost of insurance rates are determined with respect to cells of similar policyholders, "expectations as to future mortality experience" does not refer to Mr. Spegele individually, as a reference to Mr. Spegele's individual probability of death.

[1] Bates Spegele/USAA Life 000584, at 594 (example UL3) and Spegele/USAA Life 000786, at 796 (example UL4). The Specified Amount is defined as "the amount of insurance coverage issued." Bates Spegele/USAA Life 000584, at 586 (UL3) and Spegele/USAA Life 000786, at 788 (UL4).

Rather, it refers to USAA Life's exposure to mortality risk for the group of policyholders with similar demographic and risk class characteristics.

4. USAA Life's exposure to mortality over the probable lifetime of policies held by a group of similar policyholders depends upon both mortality probabilities and decisions that are under the unique control of policyholders. An individual policyholder may choose to pay additional premium, withdraw cash value, or lapse the policy. Each of these will affect the aggregate net amount at risk for the group of similar policyholders. Thus, "expectations as to future mortality experience" must include assumptions about future decisions of policyholders relating to premium payments, cash withdrawals, or lapsation. Further, because USAA Life's expectations about future mortality experience, considered on a cell-by-cell basis for groups of similar policyholders, may change as policyholders make decisions, Mr. Witt's retroactive substitution of Plaintiff's desired cost of insurance rates for actual rates is unreliable. Any decision to retroactively change cost of insurance rates would require consideration of how policyholder choices might have been changed by the change in rates.

Let me provide a simple analogy. A mathematic calculation may be said to be based on X when the actual calculation is a function of X. One possibility is $f(X) = X$. In this case, the calculation is based only on X. Absent the word "only," other possibilities of calculations that are based on X include $f(X) = 2X$ or $f(X) = X^2$. Each of these three functional forms is "based on" X.

Mr. Witt implicitly acknowledges this aspect of the words "based on" in his report. Mr. Witt indicates that he is using the mortality assumptions that were provided by USAA Life. Those assumptions were from factor-loaded mortality tables. A factor-loaded mortality table is constructed by beginning with a more general mortality experience table and applying factors to estimate mortality that is more consistent with purchasers of a particular product. The factors are, essentially, a factor times a mortality rate. Thus, like the analogy above, factor-loaded mortality tables are not just pure mortality experience. Rather, if general mortality experience is X, then factor-loaded experience is a factor times X. The factors are estimated using data and professional judgement. Thus, Mr. Witt is implicitly acknowledging that pure mortality experience from a general mortality table is not the necessary basis for cost of insurance rates. His use of factor-loaded mortality rates indicates his awareness that mortality expectations must

be consistent with the particular product or application for which they will be used. USAA Life's actual approach merely extends the factor loading to take into account other assumptions in an actuarial pricing process to arrive at cost of insurance rates.

Mr. Witt's actual approach is quite unusual. Mr. Witt implements his calculations beginning with factor loaded mortality tables. He then compares the factor adjusted mortality rates with existing cost of insurance rates for each age and selects whichever is lower. He is therefore using an internally inconstant hodgepodge of mortality rates and current cost of insurance rates. His approach is inherently unreliable. Cost of insurance rates were determined in connection with all of the assumptions made by USAA Life as it designed and repriced these universal life policies. But even if Plaintiff's interpretation of the policy is to be followed, Mr. Witt's mortality rates are not uniformly substituted for USAA Life's cost of insurance rates. Rather, the two sets of rates were blended in a manner that would appear to be designed to create the impression of consistent damages.

Before explaining these topics in more detail, I provide a brief description of universal life insurance policies in general, USAA Life's universal life policies and Mr. Spegele's policy in particular. In subsequent sections I will explain the intra-class conflicts that would be created by Mr. Witt's proposed remedy and I will explain the nature of the individual inquiries that would be needed if Mr. Witt's approach were adopted.

V. Main Features of Universal Life Policies

There are two very general types of life insurance: temporary and permanent.[2]

Temporary, or term, life insurance, in its most basic form, is issued for a fixed number of years and pays a death benefit if the policyholder dies within the term of the policy, in exchange for a fixed and constant monthly premium payment. If the policy is cancelled before the expiration of the term or the policyholder is still alive at the expiration of the term, the policyholder is not entitled to a payment from the insurance company. The premiums in a term insurance policy, net of expenses deducted to sustain the product in the marketplace, pay for the expected cost of future mortality for the sex, age, and risk class to which the policyholder

[2] An introductory reference for the discussion in this section is Moshe A. Milevsky, *The Calculus of Retirement Income, Financial Models for Pension Annuities and Life Insurance*, Cambridge University Press, 2006, Chapter 7, especially Sections 7.5 and 7.18.

belongs. While the costs of insurance increase during the term of the policy, they are averaged through a fixed premium amount that frontloads early, and smaller, mortality charges.

Permanent life insurance does not have a fixed term. It has a cash account into which premiums in excess of loads, monthly deductions, and costs of insurance can be deposited in order to obtain a fixed or variable return. The balance in the cash account is often referred to as the cash value of the policy. Universal life insurance is a type of permanent life insurance whose main features, in direct contrast with the basic form of term life insurance, are:

- Unless cancelled or lapsed, a universal life insurance policy remains in force through the "maturity age." The maturity age varies from age 95 for policies issued many years ago through age 121 for more recent policies.
- The policy allows for flexible premium payments (in both their amount and frequency).
- The policy allows for a change in the death benefit as the policyholder's circumstances vary through the life of the policy.
- The policy has a cash account that increases with premiums, net of premium load, monthly expenses and monthly mortality charges.

Universal life policies have other features such as the possibility of taking out loans against the cash value of the policy or a death benefit that could be a fixed specified amount or the sum of a fixed amount plus the cash value of the policy.

Another important difference between term and universal life insurance, and one that is central to this case, is the way mortality is reflected in charges to the policyholder. For term insurance policies, the estimated mortality charges over the life of the policy, for a given age, sex and risk classification at issuance, are averaged out and reflected in a constant premium. For universal life insurance policies, in contrast, the cost of insurance rates and charges are based, for each specified amount or death benefit amount, on the age, sex, and risk classification of the policyholder upon issuance of the policy and increase over time reflecting the corresponding increased mortality as the insured individual ages. The cost of insurance *charge* is to be distinguished from the cost of insurance *rate*, with the latter being expressed as a dollar amount per $1,000. The cost of insurance charge is related to the cost of insurance rate by a precise mathematical formula explained in the policy contract. The cost of insurance rate varies by the

sex, issue age, completed policy years, and risk classification of the insured. In some cases, as in the case of USAA Life's universal life policies, the cost of insurance rate also depends on the specified amount of the policy. I'll discuss how cost of insurance rates are based on these factors when I discuss USAA Life's universal life policies, including Mr. Spegele's policy.

Insurance companies may consider their mortality experience in the context of the overall performance of their products. When warranted in the context of the performance of a particular product, a company may adjust its mortality expectations. However, these expectations are not equivalent to the raw mortality experience in any given mortality table. Like the mortality expectations used by USAA Life and by Mr. Witt, mortality experience will be adjusted using factors that translate mortality experience (looking to the past) into the basis for mortality expectations (looking to the future). Further, USAA Life experiences mortality risk through the filter of policyholder decisions, such as lapses, policy loans, or cash withdrawals. Any changes to mortality expectations must consider not only historical aggregate mortality experience, but also policyholder behavior within the context of the policy design and competitors' product designs that might influence policyholder behavior.

The universal life insurance policies sold by insurance companies are regulated and approved by state insurance commissioners and must comply with standard self-support requirements. In general, these self-support requirements prevent an insurer from illustrating non-guaranteed elements in sales illustrations unless the product is expected to generate a certain level of cumulative profit over a given number of years. Insurance companies must demonstrate compliance through an actuarial exercise that relies on assumptions about future events. Generally, minimum guaranteed interest rates and maximum guaranteed cost of insurance rates are used in this exercise. Guaranteed maximum cost of insurance rates do not change over the life of the policy and are explicitly described in the universal life policy.

VI. USAA Life's Universal Life Insurance Policies

USAA Life marketed several versions of a universal life insurance policy, generically labeled UL1, UL2, UL3 and UL4. These policies were introduced at different times. While the complaint originally included all four policy forms, based on the report of Mr. Witt, I understand that policies in the current proposed class comprise UL3 and UL4 policies and exclude those issued

in New Jersey or Montana, UL3 policies issued in Massachusetts, and policies issued by USAA Life Insurance Company of New York.[3]

While the UL3 and UL4 policies are similar in their structure, they also have differences. I will focus on the components and calculation of the cash value across the UL3 and UL4 policies and more specifically on the calculation of the cost of insurance charges and the determination of the cost of insurance rates.

Cash Value

The cash value of the policy is defined in the same way in the UL3 and UL4 policies. The cash value of the policy is defined in the UL4 form as follows:[4]

> CASH VALUE
>
> On each Monthly Anniversary Date the cash value shall be calculated as (1) minus (2) plus (3) plus (4) plus (5) minus (6) minus (7) where:
>
> 1) Is the cash value on the prior Monthly Anniversary Date;
> 2) Is the monthly deduction for the month following the Monthly Anniversary Date;
> 3) Is one month's interest on (1) minus (2);
> 4) Is the net premium received for the policy in the prior month;
> 5) Is interest on each net premium from the day it is credited to this policy to the Monthly Anniversary Date;
> 6) Is reductions in cash value for all partial surrenders since the beginning of the preceding Monthly Anniversary Date;
> 7) Is interest on each partial surrender from the day it is granted to this policy to the Monthly Anniversary Date.
>
> On any day between Monthly Anniversary Dates, the cash value will reflect interest, payments, and withdrawals to that date.
>
> The cash value on the Effective Date of this policy is the net premium for the policy less the monthly deduction for the month following the Effective Date.

[3] Declaration and Report of Scott J. Witt, paragraph 11, page 7. Mr. Witt's description of the class states "All persons who own or owned a Universal Life 3 and/or Universal Life 4 life insurance policy issued by defendant, or its predecessors in interest, that was active as of March 1999."

[4] *See, e.g.,* See Spegele/USAA Life 000584, at 593, and 000786, at 795. *See also* Spegele/USAA Life 121519, an endorsement to modify, among other terms in the UL3 policy, the discount factor used in the calculation of the cost of insurance charge from 1.0036748 to 1.0024663.

The net premium is defined as the gross premium minus a premium deduction.[5] The premium deduction is specified on the policy schedule.

The components of the cash value and its calculation are the same for the UL3 and UL4. More specifically:[6]

> MONTHLY DEDUCTIONS (for UL3 and UL4 Policies):
>
> The monthly deduction on each monthly anniversary shall be calculated as (1) plus (2) plus (3) where:
>
> 1) Is the cost of insurance and the cost of any policy riders;
> 2) Is the monthly policy maintenance charge, which is a flat charge per policy; and
> 3) Is the monthly administrative charge, which is a flat charge per policy that is applied only during the first 12 policy months.
>
> The policy maintenance charge and the first-year administrative charge are specifically set forth on the policy schedule page.

The first-year monthly administrative charge has been $4.17, the recurrent monthly policy maintenance charge has been $2.50, and the premium charge (or load) has been 3% of premium.[7]

In the case of Mr. Spegele's UL3 policy, with an effective date of January 20, 1992, the premium deduction, monthly administrative fee (first 12 months only) and policy maintenance charges have been at the levels of 3% of gross premiums, $4.17 and $2.50, respectively.[8]

Cost of Insurance

Among the monthly deductions, the cost of insurance is (leaving aside the cost of policy riders policyholders may decide to add to their policies) the only monthly deduction that depends on the sex, age, and risk classification of the insured. As I mention above, it is important to distinguish between the cost of insurance *charge* and the cost of insurance *rate*. In the case of USAA Life's universal life policies, the cost of insurance charge is related to the cost of

[5] Spegele/USAA Life 000584, at 586 (UL3) and 000786, at 788 (UL4).
[6] Spegele/USAA Life 000584, at 586 (UL3) and 000786, at 788 (UL4).
[7] Spegele/USAA Life 027902, at 971, Spegele/USA Life 003930, and Spegele/USA Life 005216.
[8] See Policy Schedule, page 2 of Exhibit A to the Complaint.

insurance rate by a precise mathematical formula explicitly described in the policy contract. In turn, the cost of insurance rate, expressed as a dollar amount per $1,000, is based on the sex, age, and risk classification of the insured, and on the specified amount of the policy. More specifically:[9]

Table 1. Cost of Insurance Charges v. Cost of Insurance Rates

UL3	UL4
Cost of Insurance Charge	
Death benefit divided by 1.0036748 minus cash value divided by 1000 multiplied by cost of insurance rate	Death benefit divided by 1.0024663 minus cash value divided by 1000 multiplied by cost of insurance rate
Cost of Insurance Rate	
The cost of insurance rates for each Specified Amount are based on the insured's age, sex, and rate class. Current cost of insurance rates are based on our expectations as to future mortality experience.	The cost of insurance rates for each Specified Amount are based on the insured's age, sex, and rate class. Current cost of insurance rates are based on our expectations as to future mortality experience.

Plaintiff states that "under the explicit terms of [Mr. Spegele's] Policy, USAA Life is authorized to use *only* the insured's age, sex, rate class, and its expectations as to future mortality experience when determining the policy's cost of insurance rates."[10] (My italics.) I note, however, that the apparent support for Plaintiff's statement is a paragraph in Mr. Spegele's policy whose first two sentences have the exact same language as the two sentences for the cost of insurance rate displayed above for the UL3 policy, neither of which uses the word "only."

I note that Mr. Spegele's policy in particular and the UL3 and UL4 policy forms in general also include the specified amount as a factor in the bases for determination of the applicable cost

[9] See Spegele/USAA Life 000584, at 594 (UL3), and 000786, at 796 (UL4).

[10] Complaint dated 09/29/17 at ¶27, page 6 (emphasis added).

of insurance rates for a given monthly deduction. As described earlier, Plaintiff is mistaken in ignoring the specified amount when asserting that "*only* the insured's age, sex, rate class, and its expectations as to future mortality" can form the basis for cost of insurance rates. Plaintiff also ignores that current cost of insurance rates are determined in conjunction with other features of the policy, based on USAA Life's expectations as to future mortality experience and taking into account other assumptions as well as expense and profitability considerations.

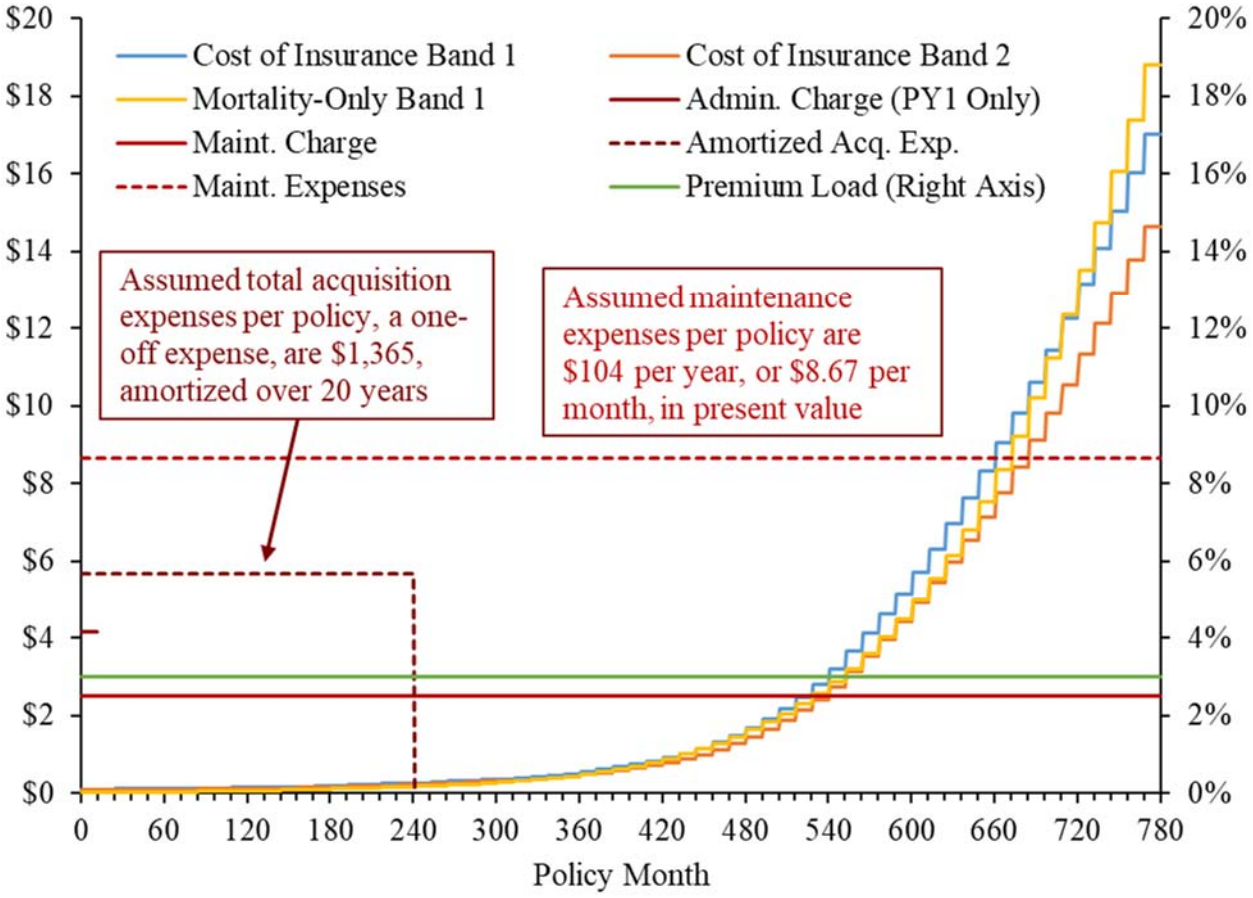
From an insurance economics point of view, USAA Life's expectations as to future mortality cannot be disentangled from some of the assumptions used while pricing the policy, such as future lapses, policy loans, cash withdrawals, premium persistency, additional premium payment, or age and exposure distribution that the company considers when pricing a universal life policy. In fact, USAA Life has provided in the past, as enclosures to its rate change filings with state regulators, studies of the company's mortality experience where the policy size and the age distribution are explicitly considered.[11]

As shown in Figure 1, USAA Life makes a number of assumptions about the various costs and benefits that will be part of the universal life products at the time it designs and prices the products. Figures 1 to 4, including examples for the UL4 original 2001 pricing and the 2005 repricing, for a male policyholder in risk class PRF (Preferred) and issue age 30, are helpful for visualizing these assumptions. The horizontal axis represents future time for the policy after it is purchased. The vertical axes represent either dollars or percentage assumptions. As can be seen clearly in the figures, the administrative charges and various expenses are assumed and held constant over time. The cost of insurance charges vary over time based upon age and net amount at risk rate bands.[12]

[11] See Spegele/USAA Life 027902, at 908-943.

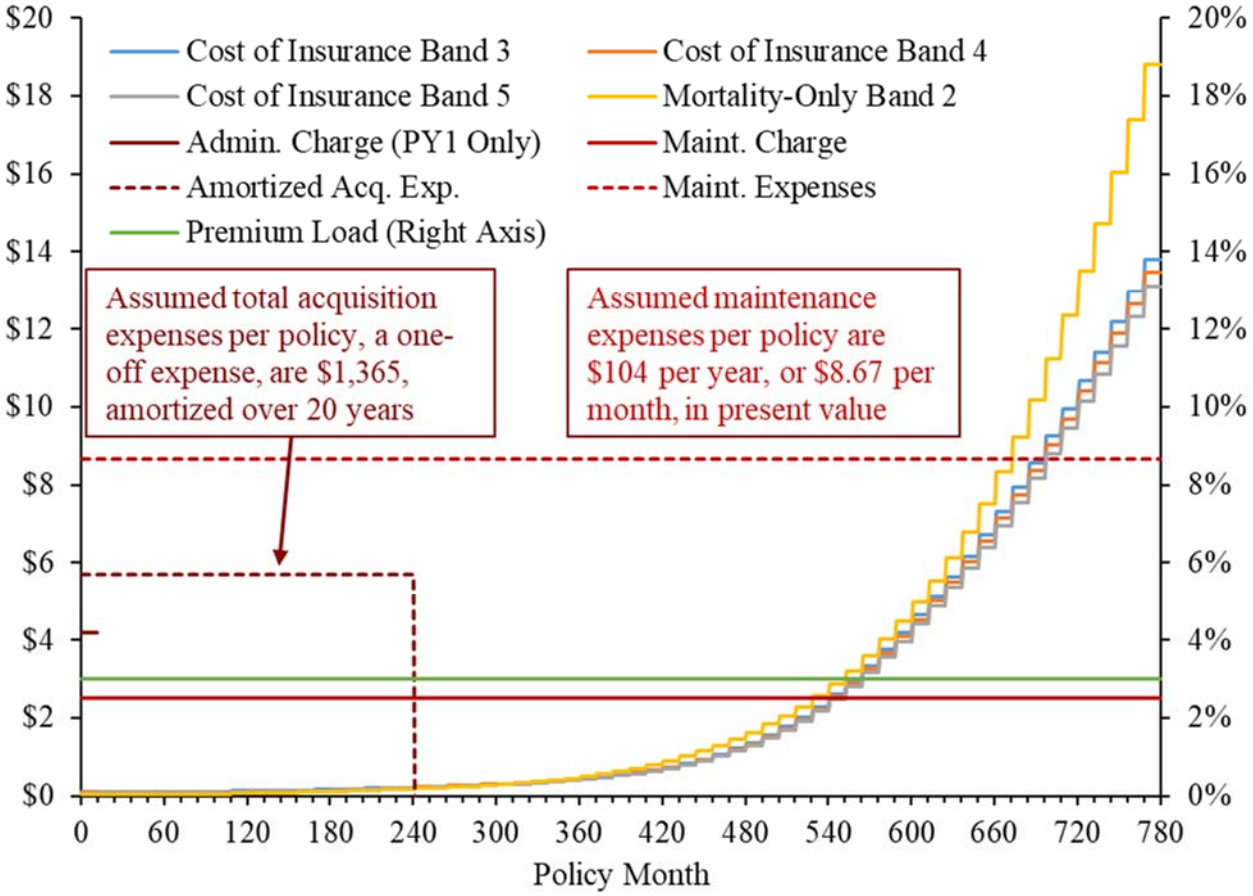
[12] The 2001 pricing of the UL4 policy had five net amount at risk cost of insurance rate bands and three mortality bands for each sex, issue age, and risk class. The 2005 repricing of the UL4 policy had the same five net amount at risk cost of insurance rate bands and four mortality bands for each sex, issue age, and risk class.

Figure 1. UL4 Cost of Insurance Rates, Other Monthly Deductions, Premium Load, and Expense Assumptions v. Mortality Experience (2001 Mortality & Cost of Insurance Rates, Male PRF, Issue Age 30)[13]



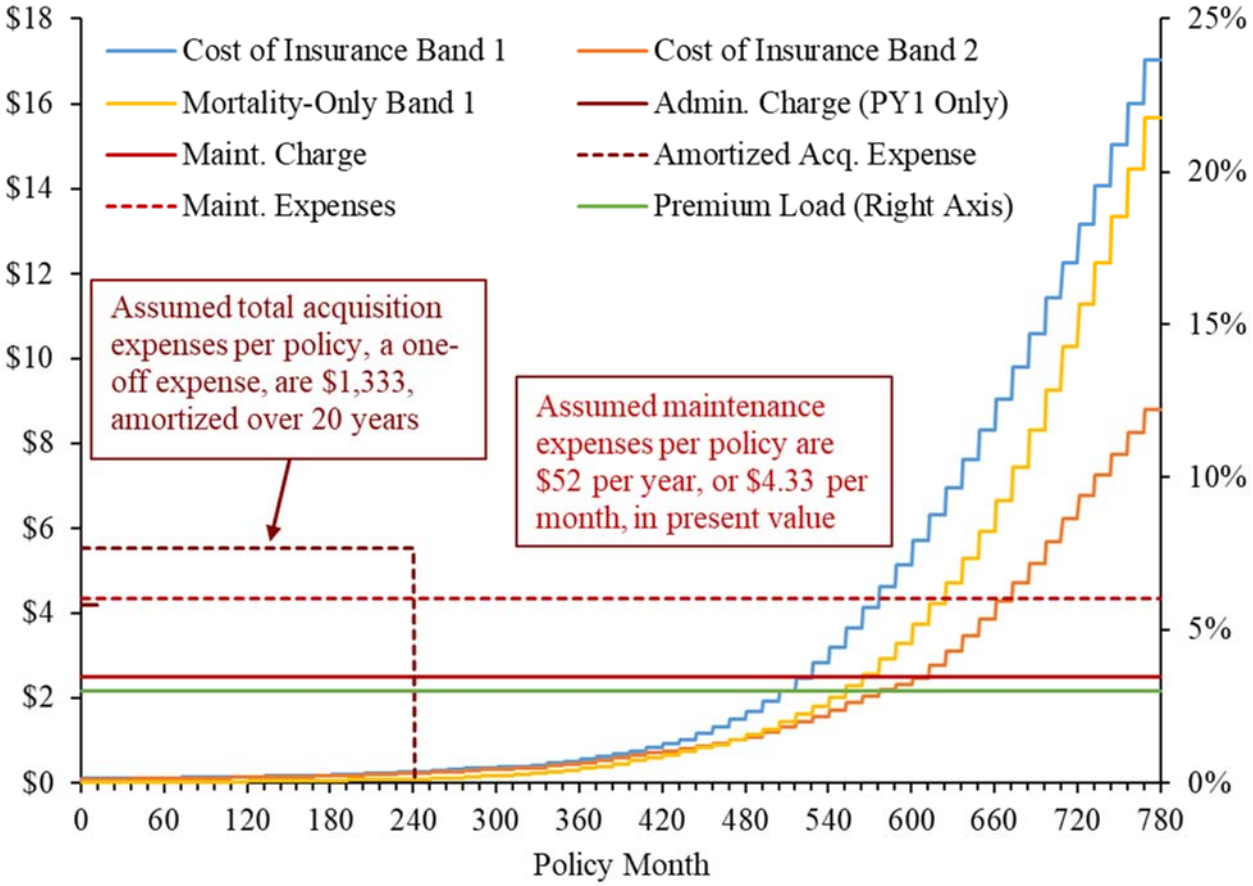
[13] Cost of Insurance rate bands 1 and 2 correspond to mortality-only band 1.

Figure 2. UL4 Cost of Insurance Rates, Other Monthly Deductions, Premium Load, and Expense Assumptions v. Mortality Experience (2001 Mortality & Cost of Insurance Rates, Male PRF, Issue Age 30)[14]



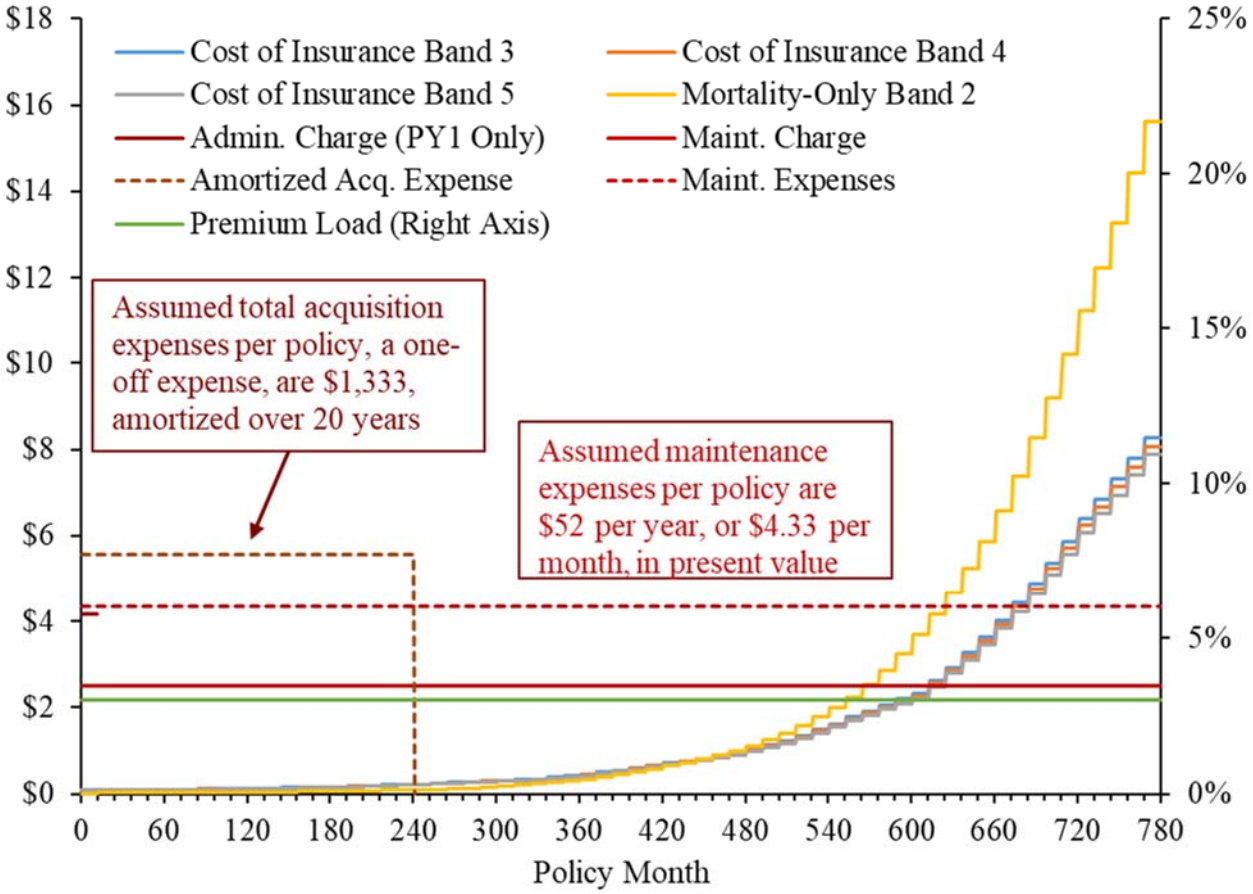
[14] Cost of insurance rate bands 3 and 4 correspond to mortality-only band 2. Cost of insurance rate band 5 corresponds to mortality-only band 3 (not shown because it is very similar to mortality-only band 2).

Figure 3. UL4 Cost of Insurance Rates, Other Monthly Deductions, Premium Load, and Expense Assumptions v. Mortality Experience (2005 Mortality & Cost of Insurance Rates, Male PRF, Issue Age 30)[15]



[15] Cost of insurance rate bands 1 and 2 correspond to mortality-only band 1.

Figure 4. UL4 Cost of Insurance Rates, Other Monthly Deductions, Premium Load, and Expense Assumptions v. Mortality Experience (2005 Mortality & Cost of Insurance Rates, Male PRF, Issue Age 30)[16]



[16] Cost of insurance rate bands 3, 4, and 5 correspond to mortality-only bands 2, 3, and 4, respectively. Mortality-only bands 3 and 4 are not shown because they are very similar to mortality-only band 2.

Included on each chart is a depiction of a mortality-only rates for the corresponding net amount at risk bands.[17] The cost of insurance rates very obviously move in tandem with mortality over the life of the policyholder. The relationship is more complex than cost of insurance rates just being a simple sum of mortality and some kind of spread. In some cases, cost of insurance rates are above, and in other cases below, mortality-only rates. USAA Life makes assumptions about lapse, policy loan, premium payment and cash withdrawal behavior that are incorporated into its pricing exercise. The cost of insurance rates that emerge from that exercise are based upon mortality, as Figures 1 – 4 above illustrate, and conditional upon the structure of the product.

Further, because mortality-only rates are neither consistently above, nor below, cost of insurance rates, it is a virtual certainty that some policyholders will prefer the current rates while others will prefer mortality-only rates. I will demonstrate this in more detail later in this report. But it is important to understand that the cost of insurance rates are not set arbitrarily. They are determined within an actuarial pricing process that factors in multiple assumptions about the economic environment, the different ways policyholders may use their policies (depositing more or less money, taking loans, etc.), mortality exposure, expenses, and target profitability.

Plaintiff argues that a particular mortality expectation, factor-loaded mortality rates, should be arbitrarily substituted for current cost of insurance rates. Mr. Witt, possibly aware of the intra-class conflict that would be inherent in such a substitution, proposed at his deposition to calculate damages using the lesser of actually charged cost of insurance rates or a factor loaded mortality rate.[18] While his approach might reduce the appearance of intra-class conflict, it is ad hoc and not described in his written report. As I will explain in more detail below, this approach is both logically and economically irrational.

The actuarial pricing process is like a very sophisticated calculator that combines all of the assumptions made by USAA Life as it sets the prices and benefits associated with products like these universal life policies, to see if the product is economically viable. If one wished to change a feature, like cost of insurance rates, it would be necessary to revisit the entire pricing process to

[17] As I explain in detail in Section V below, mortality-only rates are expressed as a monthly rate per $1,000 to make it directly comparable to USAA Life's cost of insurance rate schedules.

[18] Witt Deposition, pages 55-57.

see if the changes would still be economically viable in light of all of the other assumptions. This repricing happens from time to time. USAA Life did this during the class period in this case. Mr. Witt, in contrast, has not. His approach ignores the economic viability of his ad hoc cost of insurance rate replacements and is, thus, not reliable.

USAA Life's actuarial pricing process for the UL3 and UL4 policies combined the factors and assumptions mentioned above. It is convenient to think of the actuarial process of repricing the UL3 and UL4 policies as a process of adapting the initial design to the evolution of those factors, including the growth of the industry, as reflected in the increase in the number and the width of the death benefit (or net amount at risk) bands to which different cost of insurance rate schedules would apply.[19]

Another important concern for the management of a universal life policy with a cash account and a minimum guaranteed interest rate has been the secular reduction in interest rates that has taken place in the US economy since late 1982. This trend has exposed many insurance companies offering minimum rate guarantees to significant risks that necessitated partial redesigns of their products. Since all of USAA Life's UL3 and UL4 policies had a cash account with a minimum interest rate guarantee, the need to respond to the interest rate environment became one of the reasons to transition from the UL3 policy to the UL4 in late 2001.[20] An illustration of the risks involved is evident in a recent statement for Plaintiff, who enjoyed a minimum guaranteed rate of 4.5% for January 2019.[21] In recent years, Treasury yields have declined significantly so that investment grade corporate securities and US Treasury securities had yields below 4.5%. For example, the average January 2019 yields on 10-, 20-, and 30-year US Treasury bonds were 2.71%, 2.81%, and 3.07% respectively.[22] The 20-year bond average yield for corporate AAA bonds in January 2019 was 3.93%. The 20-year AAA corporate bond yield is an important component of the High-Quality Market index tracked by the Federal Reserve (also including AA- and A-rated corporate bonds) as an indicator in corporate bond markets. The US Treasury 10- and 30-year bond yields are important market references for 15-

[19] See Spegele/USAA Life 003791 for a discussion of the main reasons behind the introduction of new versions of the USAA universal life policies.

[20] Spegele/USAA Life 003791.

[21] Spegele/USAA Life 121520, at 522.

[22] For AAA corporate bond yields, see https://fred.stlouisfed.org/series/AAA. For US Treasury constant maturity yields, see https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15.

and 30-year mortgages, respectively. During this time period, the yield curve was generally upward sloping with short term yields even lower than the long-term benchmarks just described. These bonds are important components of life insurance company investment portfolios and serve as indicators of the industry's investment environment.[23]

Lower lapse rates have also caused a higher exposure to mortality than was expected at the outset of the UL3 and UL4 policies. Thus, in that sense mortality experience for USAA Life is higher than expected even in an environment where aggregate mortality rates may have declined.[24]

The main features of the UL3 and UL4 policies and their subsequent respective repricings are summarized in Table 2.

Following the introduction of the UL4 policy in late 2001, UL3 policies were no longer sold in most states. As part of the 1994 repricing of the UL3 policy, a new net amount at risk band was added for in-force UL3 policies.

[23] Bond holdings, by asset class, are shown for US life insurance companies in "Final Demand for Structured Finance Securities," by Craig B. Merrill, Taylor D. Nadauld, and Philip E. Strahan, *Management Science*, Jan 2019. Further, the impact of declining yields is explored in this paper.

[24] For the UL3 policy, lapse assumptions were expected to be 5% for years 6 and above, both at the original pricing (Spegele/USAA Life 006605, at 608) and at the 1994 repricing (Spegele/USAA Life 027902, at 907). However, USAA Life's "1999-2015 Life Mortality & Lapse Experience Study" found that the overall UL3 lapse experience for this period had been below 5% (Spegele/USAA Life 066231, at 237).

Table 2. UL3 & UL4 Policy Features

	UL3	UL4
Product Code	LUL258ST	LUL286ST
Policy Date	June 1987	Late 2001
Pricing		
Date	April 1988	Late 2001
Mortality Table for Current Cost of Insurance Rates	1981 Bragg Table	75-80 Table with Manulife Extension
Mortality Multiples for Current Cost of Insurance Rates	Multiples by issue age	Lincoln National factors for 5 rate classes
Max. Guaranteed Cost of Insurance Rates	1980 CSO M/F NS ALB 1980 CSO M/F S ALB	1980 CSO M/F NS ALB 1980 CSO M/F S ALB
Net Amount at Risk Bands	$0 – $100K $100K – $250K $250K and above	$0 – $100K $100K – $300K $300K – $500K $500K – $1M $1M and above
Repricing of 1994 (UL3)		
Mortality Table for Current Cost of Insurance Rates	Modified 1981 Bragg Table	
Mortality Multiples for Current Cost of Insurance Rates	Multiples by issue age	
Max. Guaranteed Cost of Insurance Rates	1980 CSO M/F NS ALB 1980 CSO M/F S ALB	
NAR Bands	$25K – $100K $100K – $250K $250K – $500K $500K and above	

Note: CSO: commissioners standard ordinary mortality table; M: Male; F: Female; S: Smoker; NS: Nonsmoker; ALB: Age Last Birthday.

Table 2. UL3 & UL4 Policy Features (Continued)

	UL3	UL4
Product Code	LUL258ST	LUL286ST
Policy Date	June 1987	Late 2001
Repricing of 2005 (UL4)		
Mortality Table for Current Cost of Insurance Rates		75-80 Table with Manulife Extension
Multiples for Current Cost of Insurance Rates		ING multipliers by sex, class, and band
Max. Guaranteed Cost of Insurance Rates		1980 CSO M/F NS ALB 1980 CSO M/F S ALB
Net Amount at Risk Bands		$0 – $100K $100K – $300K $300K – $500K $500K – $1M $1M and above

Note: CSO: commissioners standard ordinary mortality table; M: Male; F: Female; S: Smoker; NS: Nonsmoker; ALB: Age Last Birthday.

Table 2 illustrates the process of adapting USAA Life's universal life policies to the factors I mentioned above, namely the changing mortality that USAA Life (and other life insurers) faced over the period (by adopting revised mortality tables and incorporating mortality experience by means of multipliers, factors, and scalars), the ability of USAA Life to rate its mortality risks (by increasing the risk classes), and the expanding size of the market (by increasing the number and width of net amount at risk bands).

Specifically, USAA Life changed its current cost of insurance rate schedules for the UL3 and UL4 policies during this period, both at the time of the 1994 repricing of the UL3 policy and at the time of the repricing of the UL4 policy in 2005.

This evidence is contrary to Plaintiff's allegation that "Defendant has, on information and belief, failed to lower monthly cost of insurance rates for the Policy and Class Policies."[25] In fact, the opposite is true, as discussed below. Current rates did change for Mr. Spegele (see Section VII) and for the Class Policies (see Section X).

[25] Complaint dated 09/29/17, page 13 at paragraph 67.

VII. Mr. Spegele's Universal Life Policy

Mr. Spegele purchased a UL3 policy from USAA Life with an effective date of January 20, 1992. The relevant characteristics of Mr. Spegele's policy are summarized in Table 3 below:

Table 3. Characteristics of Mr. Spegele's UL3 Policy[26]

• Age Last Birthday on the Effective Date:	44
• Risk Class:	Male, Nonsmoker
• Specified Amount:	$25,000
• Planned Quarterly Premium Payment:	$100
• Current Interest Rate (for January 1992):	8.25%
• Minimum Guaranteed Interest rate:	4.50%
• Monthly Accidental Death Benefit Charge (Death Benefit of $10,000 through 1/20/18):	$0.70 – $0.90, based on attained age
Charges	
• Monthly Administrative Charge (First Year Only):	$4.17
• Monthly Maintenance Charge:	$2.50
• Premium Deduction:	3% of premium

For the 27 policy years between January 20, 1992 and January 20, 2019, for which there are complete annual statements, Mr. Spegele deposited total premiums of $7,987.

For the first 18 years of the policy, through January 20, 2010, Mr. Spegele paid an average quarterly premium of approximately $100 for a total of $7,807.

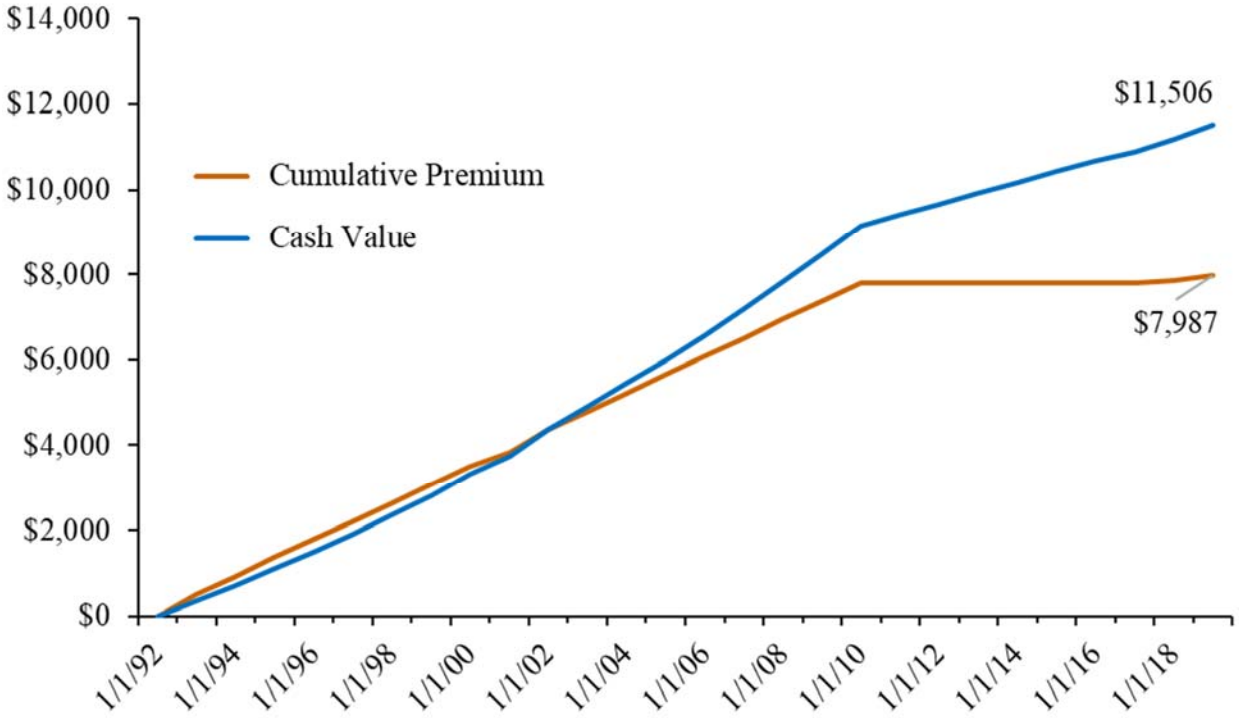
For the next seven years and seven months, from January 21, 2010 through July 31, 2017, Mr. Spegele did not deposit any premium into his policy. From August 1, 2017, through January 20, 2019, Mr. Spegele resumed premium deposits at the rate of $10 per month for an additional total of $180. My understanding is that Mr. Spegele's policy is currently in force.

The premiums Mr. Spegele paid into his account minus premium deductions, administrative charges, monthly maintenance charges, and insurance charges (including the cost of insurance and the accidental death rider cost), plus the interest credited to the cash account, resulted in a

[26] Exhibit A to the Complaint.

cash value of $11,506 as of January 20, 2019. Figure 5 below shows the cumulative premiums paid and the cash value of the account through time.

Figure 5. Mr. Spegele's UL3 Policy – Cumulative Premiums & Cash Values (January 20, 1992 – January 20, 2019)



The cost of insurance charge is a monthly charge that varies with the attained age of the insured. Mr. Spegele's policy contract states:[27]

> The cost of insurance rates for each Specified Amount are based on the insured's age, sex and rate class. Current cost of insurance rates are based on our expectations as to future mortality experience. Any changes to cost of insurance rates will apply to all persons of the same age, sex and rate class. USAA LIFE guarantees that the cost of insurance rates will never be greater than those shown in the Table of Monthly Guaranteed Cost of Insurance Rates found in the Policy Schedule page.

For Mr. Spegele's policy, cost of insurance rates remained significantly below guaranteed maximum rates.

[27] Exhibit A to the Complaint, page 12.

Further, cost of insurance rates did change after the issuance of Mr. Spegele's policy, mostly by going down. The new rates became effective on December 1, 1994, after the repricing of the UL3 policy as discussed in Section VI above.

Table 4 shows the actual and guaranteed cost of insurance rates in effect for Mr. Spegele (and others of the same attained age, sex and risk classification) over time.

Table 4. Relevant Actual and Guaranteed Cost of Insurance Rates[28]

		Monthly Rate per $1,000	
Policy Year	Age	Actual	Guaranteed
1	44	0.169	0.265
2	45	0.178	0.287
3	46	0.192	0.310
4	47	0.207	0.335
5	48	0.222	0.363
6	49	0.235	0.393
7	50	0.251	0.427
8	51	0.269	0.466
9	52	0.288	0.511
10	53	0.307	0.563
11	54	0.329	0.621
12	55	0.341	0.685
13	56	0.358	0.755
14	57	0.385	0.829
15	58	0.422	0.912
16	59	0.460	1.005
17	60	0.505	1.108
18	61	0.559	1.223
19	62	0.618	1.356
20	63	0.680	1.507
21	64	0.750	1.674
22	65	0.829	1.857
23	66	0.928	2.055
24	67	1.048	2.268
25	68	1.190	2.499
26	69	1.352	2.755
27	70	1.534	3.045

I emphasize that the "actual" rates reported in Table 4 are the rates in effect from January 20, 1992 through January 20, 2019 − that is, the ones that were actually charged. One can compare

[28] Spegele/USAA Life 000001, at 007-008; Spegele/USAA Life 003580, at 584-585. The relevant cost of insurance rates are for Band 1, Male Non-Smoker.

these actual rates with those in effect when Mr. Spegele's policy was issued. I do this in the context of a policy illustration provided to Mr. Spegele on January 20, 1992, the effective date of the policy. The illustration showed how the policy would perform in the future under certain assumptions, one of which was the continued use of the then-current cost of insurance rates. This illustration was based on the following characteristics and assumptions:[29]

Table 5. Characteristics and Assumptions in Mr. Spegele's Illustration

• Age Last Birthday on the Effective Date:	44
• Risk Class:	Nonsmoker
• Specified Amount:	$25,000
• Quarterly Premium Payment:	$100
• Current Interest Rate:	8.25%
• Minimum Guaranteed Interest rate:	4.50%
• There are no loans and/or withdrawals	
• Premium payments assumed through age 95	

Based on these characteristics and assumptions, the policy illustration reports cash surrender values and death benefits for policy years 1 through 20 and ages 60, 65, 70, and 95, given the current and guaranteed cost of insurance rates in effect when Mr. Spegele's policy was issued.

The illustration specifies that the current cost of insurance rates used to calculate cash surrender values are subject to change.[30] Those rates did, in fact, change after Mr. Spegele purchased his policy; as noted above, the new rates became effective on December 1, 1994.

The current and guaranteed rates used in the illustration provided to Mr. Spegele, selected for the relevant attained ages, sex, and risk classification are shown in Table 6 below.

[29] Spegele_000093.

[30] Spegele_000093, at 094.

Table 6. Relevant Current (Circa 1992) and Guaranteed Cost of Insurance Rates[31]

		Monthly Cost of Insurance Rate per $1,000	
Policy Year	Age	Current	Guaranteed
1	44	0.169	0.265
2	45	0.178	0.287
3	46	0.192	0.310
4	47	0.207	0.335
5	48	0.222	0.363
6	49	0.237	0.393
7	50	0.252	0.427
8	51	0.270	0.466
9	52	0.290	0.511
10	53	0.312	0.563
11	54	0.334	0.621
12	55	0.359	0.685
13	56	0.392	0.755
14	57	0.429	0.829
15	58	0.469	0.912
16	59	0.512	1.005
17	60	0.559	1.108
18	61	0.612	1.223
19	62	0.671	1.356
20	63	0.735	1.507
21	64	0.806	1.674
22	65	0.880	1.857
23	66	0.991	2.055
24	67	1.114	2.268
25	68	1.257	2.499
26	69	1.424	2.755
27	70	1.607	3.045

Table 7 compares the relevant cost of insurance rates used in Mr. Spegele's original policy illustration (i.e., those that were in effect when he bought the policy) with the new schedule of rates introduced on December 1, 1994 that were actually applied to Mr. Spegele's policy.

[31] Spegele/USAA Life 000001, at 007-008. The relevant cost of insurance rates are for Band 1, Male Non-Smoker.

Table 7. Then-Current Cost of Insurance Rates Used in Illustration And Actual Cost of Insurance Rates Applied to the Sepegele Policy[32]

		Cost of Insurance Rate per $1,000	
Policy Year	Age	Illustration	Actual
1	44	0.169	0.169
2	45	0.178	0.178
3	46	0.192	0.192
4	47	0.207	0.207
5	48	0.222	0.222
6	49	0.237	0.235
7	50	0.252	0.251
8	51	0.270	0.269
9	52	0.290	0.288
10	53	0.312	0.307
11	54	0.334	0.329
12	55	0.359	0.341
13	56	0.392	0.358
14	57	0.429	0.385
15	58	0.469	0.422
16	59	0.512	0.460
17	60	0.559	0.505
18	61	0.612	0.559
19	62	0.671	0.618
20	63	0.735	0.680
21	64	0.806	0.750
22	65	0.880	0.829
23	66	0.991	0.928
24	67	1.114	1.048
25	68	1.257	1.190
26	69	1.424	1.352
27	70	1.607	1.534

The original policy illustration also states that the reported cash surrender values are based on the then-current interest rate of 8.25%, which was assumed to be constant through age 95.[33] Declared interest rates changed after January 1992.

In this Section, I conduct two comparisons:

[32] Spegele/USAA Life 000001, at 007-008; Spegele/USAA Life 003580, at 584-585. The relevant cost of insurance rates are for Band 1, Male Non-Smoker.

[33] Annual Statement for the period 1/20/1992 – 1/20/1993.

1. Current Cash Surrender Values shown in the illustration v. the Cash Surrender Values that would have resulted if Mr. Spegele's policy premium amounts (and their timing), and interest rates had been the same as those assumed in the illustration.

2. Guaranteed Cash Surrender Values shown in the illustration v. the Cash Surrender Values that would have resulted if Mr. Spegele's policy premium amounts (and their timing), then-current cost of insurance rates and interest rates had been the same as the ones assumed in the illustration.

Both comparisons are apples-to-apples comparisons because the only variable is the set of cost of insurance rates used, meaning the differences can be exclusively attributed to the different rates. The illustrated "Current" cash surrender values in Comparison 1 are calculated using the then-current rates in Table 6. The illustrated "Guaranteed" cash surrender values in Comparison 2 are calculated using the guaranteed rates in Table 6.

In December 1994, new current cost of insurance rates came into effect. As shown in Table 7 above, the new rates were lower than the previous rates for higher ages, at least with respect to a person with Mr. Spegele's characteristics. In Comparison 1, I calculate the cash values that would have resulted from applying the actual cost of insurance rates in effect (i.e., those issued after 1994), assuming that the annual premium payments ($400) and the declared interest rates (8.25%) were the same as those used in the illustration.[34]

Table 8 reports the results of Comparison 1. The smaller actual cost of insurance rates from policy year 6 and later results in a larger cash value compared to the corresponding cash value using the rates from the original policy illustration. Specifically, as of the end of the most recent policy year reported in the illustration (1/20/2018) the illustration's cash value, using the apples-to-apples assumptions described above, would be $23,827, and the cash value calculated using the actual cost of insurance rates (and the same assumptions) is $24,095, or $268 higher. What this indicates is that the cost of insurance rates actually assessed in Mr. Spegele's policy were more favorable to him than those assumed in the original policy illustration.

[34] I assume that quarterly premium payments of $100 each are made at the start of each quarter. An interest rate of 7.928% is compounded daily to yield an effective rate of 8.25%. See Spegele/USAA Life 026419, at 420.

Table 8. Current Cash Values in Mr. Spegele's Policy Illustration and Cash Values Assuming Actual Cost of Insurance Rates

		Illustration (Based on 8.25%)		Using Actual Cost of Insurance Rates	
Policy Year	Period	Annual Payments	Cash Surrender Values	Annual Payments	Cash Values
1	1/21/92-1/20/93	$400	$263	$400	$263
2	1/21/93-1/20/94	$400	$598	$400	$598
3	1/21/94-1/20/95	$400	$957	$400	$957
4	1/21/95-1/20/96	$400	$1,342	$400	$1,342
5	1/21/96-1/20/97	$400	$1,756	$400	$1,756
6	1/21/97-1/20/98	$400	$2,200	$400	$2,201
7	1/21/98-1/20/99	$400	$2,679	$400	$2,680
8	1/21/99-1/20/00	$400	$3,193	$400	$3,195
9	1/21/00-1/20/01	$400	$3,747	$400	$3,750
10	1/21/01-1/20/02	$400	$4,342	$400	$4,347
11	1/21/02-1/20/03	$400	$4,984	$400	$4,989
12	1/21/03-1/20/04	$400	$5,674	$400	$5,685
13	1/21/04-1/20/05	$400	$6,418	$400	$6,439
14	1/21/05-1/20/06	$400	$7,218	$400	$7,251
15	1/21/06-1/20/07	$400	$8,080	$400	$8,125
16	1/21/07-1/20/08	$400	$9,009	$400	$9,069
17	1/21/08-1/20/09	$400	$10,012	$400	$10,090
18	1/21/09-1/20/10	$400	$11,096	$400	$11,190
19	1/21/10-1/20/11	$400	$12,268	$400	$12,379
20	1/21/11-1/20/12	$400	$13,537	$400	$13,667
Age		**Total Payments**		**Total Payments**	
60	1/21/92-1/20/08	$6,400	$9,009	$6,400	$9,069
65	1/21/92-1/20/13	$8,400	$14,914	$8,400	$15,065
70	1/21/92-1/20/18	$10,400	$23,827	$10,400	$24,095
71	1/21/92-1/20/19	N/A	N/A	$10,800	$26,378

Table 9 reports the results of the second comparison. In this case the assumed interest rate is the minimum guaranteed rate of 4.5% used in the original policy illustration and the assumed premium payments are $100 per quarter. Using these assumptions, I then compare the cash

values that Mr. Spegele would have seen using the maximum guaranteed cost of insurance rates (shown in the rightmost column of Table 6) and using the cost of insurance rates actually applied to his policy (shown in the rightmost column of Table 7).

Table 9. Guaranteed Cash Values in Mr. Spegele's Policy Illustration and Cash Values Assuming Actual Cost of Insurance Rates

		Illustration (Based on 4.25%)		Using Actual Cost of Insurance Rates	
Policy Year	Period	Annual Payments	Cash Surrender Values	Annual Payments	Cash Values
1	1/21/92-1/20/93	$400	$228	$400	$257
2	1/21/93-1/20/94	$400	$511	$400	$574
3	1/21/94-1/20/95	$400	$801	$400	$903
4	1/21/95-1/20/96	$400	$1,099	$400	$1,242
5	1/21/96-1/20/97	$400	$1,402	$400	$1,594
6	1/21/97-1/20/98	$400	$1,712	$400	$1,959
7	1/21/98-1/20/99	$400	$2,028	$400	$2,336
8	1/21/99-1/20/00	$400	$2,349	$400	$2,727
9	1/21/00-1/20/01	$400	$2,674	$400	$3,132
10	1/21/01-1/20/02	$400	$3,001	$400	$3,551
11	1/21/02-1/20/03	$400	$3,330	$400	$3,985
12	1/21/03-1/20/04	$400	$3,660	$400	$4,437
13	1/21/04-1/20/05	$400	$3,989	$400	$4,908
14	1/21/05-1/20/06	$400	$4,317	$400	$5,395
15	1/21/06-1/20/07	$400	$4,642	$400	$5,897
16	1/21/07-1/20/08	$400	$4,963	$400	$6,416
17	1/21/08-1/20/09	$400	$5,277	$400	$6,952
18	1/21/09-1/20/10	$400	$5,582	$400	$7,503
19	1/21/10-1/20/11	$400	$5,874	$400	$8,070
20	1/21/11-1/20/12	$400	$6,149	$400	$8,654
Age		**Total Payments**		**Total Payments**	
60	1/21/92-1/20/08	$6,400	$4,963	$6,400	$6,416
65	1/21/92-1/20/13	$8,400	$6,403	$8,400	$9,256
70	1/21/92-1/20/18	$10,400	$7,198	$10,400	$12,500
71	1/21/92-1/20/19	N/A	N/A	$10,800	$13,192

In Table 9, I observe that the cash values that result from using the actual cost of insurance rates that applied to Mr. Spegele's policy are systematically larger than the corresponding cash values using the guaranteed maximum rates from the original policy illustration. The difference is entirely due to the lower cost of insurance rates applied to Mr. Spegele's policy. Specifically, as of the end of the most recent policy year reported in the illustration, 1/20/2018, the illustration's guaranteed cash value is $7,198, and the cash value using the actual cost of insurance rates is $12,500, or $5,402 higher.

The original policy illustration given to Mr. Spegele when he purchased his policy depicted possible outcomes with two different assumptions about cost of insurance rates – one assuming the rates then in effect, and one assuming maximum rates. As it turned out, the rates USAA Life actually used were more favorable to Mr. Spegele than either of those assumptions.

VIII. Mortality-Only Cost of Insurance

As stated in Mr. Spegele's contract, "[t]he cost of insurance rates for each Specified Amount are based on the Insured's age, sex, and rate class. Current cost of insurance rates are based on our expectations as to future mortality experience."[35]

Using the very same words I have just cited from Mr. Spegele's policy, Plaintiff concludes that "[u]nder the explicit terns of the Policy, USAA Life is authorized to use *only* the insured's age, sex, rate class, and its expectations as to future mortality experience when determining the Policy's cost of insurance rates."[36] (my italics.)

No formula is provided for calculating cost of insurance rates. Rather, the rates are determined during the process of pricing USAA Life's universal life policies. This is an iterative actuarial process designed to make the product competitive, to comply with the requirements of the policy, to satisfy regulatory requirements, and to meet USAA Life's profitability targets. The calculation of cost of insurance rates based on USAA Life's mortality expectations by age, sex, and risk class is an integral part of this iterative actuarial process, which also takes into account USAA Life's experience and assumptions on lapses, surrenders, policy loans, premium

[35] Complaint, page 6, paragraph 27.

[36] Complaint, page 6, paragraph 27 (emphasis added).

persistence, age distribution, interest rate environment, and profitability and other financial targets such as internal rate of return or return on investment.

Based on this information, I have calculated hypothetical mortality-only cost of insurance rates for the UL4 policy and compared them to USAA Life's cost of insurance rates. I have not tested whether the mortality-only rates would make the UL3 and UL4 policies self-supporting and compliant with insurance laws. Such an analysis would require a full actuarial repricing of the policies. I can conclude, however, that USAA Life's actual cost of insurance rates are not uniformly higher than the mortality-only rates suggested by Mr. Witt.

My analysis starts with the deaths per 1,000 individuals that are generally reported in mortality tables. First, I convert these values into the corresponding fraction of 1,000 individuals who die in any given age and sex over one year, q_x, by dividing "Deaths per 1,000" by 1,000. I then apply the factor corresponding to the age, sex and risk class, $F_{Age,\ Sex,\ Class}$, to the fraction q_x, divide the result by 12, and multiply it by 1,000 in order to obtain corresponding hypothetical monthly mortality-only cost of insurance rates per $1,000 of net amount at risk: [37]

$$\text{Hypothetical Mortality} - \text{Only Cost of Insurance Rate} = F_{Age,\ Sex,\ Class} \cdot \frac{q_x}{12} \cdot 1000\,, \quad q_x = \frac{\text{Deaths per } 1000}{1000}\,.$$

As indicated in Table 2 above, for the original pricing of the UL4 policy in 2001, the applicable factors are the Lincoln National Factors, and for the 2005 repricing, the applicable factors are the ING multipliers.

Once the mortality-only cost of insurance rates are calculated, a corresponding rate schedule can be derived for a given policy issue age, covering a desired number of policy years. This mortality-only cost of insurance rate schedule can be charted against USAA Life's actual rate schedule for a comparable number of policy years, sex, and risk classifications.[38]

[37] Mr. Witt calculates the monthly mortality-only cost of insurance rate using a compounding formula for the monthly mortality, $[1 - (1 - F_{Age,\ Sex,\ Class} \cdot q_x)^{\frac{1}{12}}] \cdot 1000$. This formula produces slightly higher rates than the formula I am using. For the values reported in column "Spegele Monthly Mortality" of the table on page 43 of Mr. Witt's declaration, the average difference with my calculation is 0.19%.

[38] USAA Life's current cost of insurance rates in tab "UL4 Reprice" of file "Spegele v. USAA (Current cost of insurance Data UL1-4) SpegeleUSAA Life 121518.xlsb" stop at age 94 because the policy matures at age 95.

I provide these comparisons in the subsections below. Since USAA Life calculates cost of insurance charges in a ratcheted fashion so that the net amount at risk is divided into tranches by net amount at risk band, to which the corresponding rate applies, I consider the **effective cost of insurance** rates that result from this method both for USAA Life's actual cost of insurance rates and the corresponding hypothetical mortality-only rates.

The calculation of the effective cost of insurance rate, for a given amount of net amount at risk, applies the corresponding cost of insurance rates to the relevant tranches into which that net amount at risk can be classified. This is similar to how income tax is calculated based on a schedule of tax rates by income bracket.

I next illustrate how the calculation of the effective cost of insurance rate is done. USAA Life produced an example of the calculation of a monthly cost of insurance charge for the UL3. The example involved the post-1994 cost of insurance rates for a male, nonsmoker, issue age 30.[39] The net amount at risk is assumed to be $750,000. This calculation is reproduced below:

Illustration of Current Cost of Insurance Calculation[40]

Band 1	1st $100,000:	$100,000/1,000 x .111 =	**$11.10**
Band 2	Next $150,000:	$150,000/1,000 x .105 =	**$15.75**
Band 3	Next $250,000:	$250,000/1,000 x .089 =	**$22.25**
Band 4	Final $250,000:	$250,000/1,000 x .083 =	**$20.75**
	Total Monthly Cost of Insurance:		**$69.85**

To calculate the effective cost of insurance rate per $1,000, I divide the $69.85 cost of insurance charge by 750 (or $750,000/$1,000) and obtain an effective rate of 0.0931. This rate is, in fact, the weighted average of the cost of insurance rates shown in the illustration where the weights are the amount of net amount at risk in each band divided by the total net amount at risk.

The effective cost of insurance rate of 0.0931 is a weighted average of the four band-specific cost of insurance rates. Thus, except for policies that are in band 1 only, the effective rate is actually higher than the highest band's cost of insurance rate. For example, in the illustration the

[39] Actuarial Memorandum, Spegele/USAA Life 027902, at 969.

[40] The calculation in Bates 027969 incorrectly reports the product of $150,000/1,000 x 0.105 as $10.50. The correct amount is $15.75.

effective cost of insurance rate is 0.0931 and the band 4 cost of insurance rate is lower at 0.083. Thus, the effective cost of insurance rate tends to be higher than the marginal actual cost of insurance rate based upon the highest band in the calculation. The result of this is that the comparison of mortality-only rates to effective cost of insurance rates will, generally, result in fewer policy years for which the mortality-only cost of insurance rate is higher than the corresponding effective cost of insurance rate. This pattern is observed in Tables 10 and 11, and Tables 12 and 13, below.

As the illustration above makes clear, the effective cost of insurance rate cannot be calculated without knowing the precise amount of total net amount at risk used in the calculation. For instance, if the total net amount at risk in this illustration had been $800,000 instead of $750,000, the weights would have changed and the effective cost of insurance rate would have been 0.925 instead of 0.931.[41] Therefore, the effective cost of insurance rates used to calculate the values reported in Table 14 are based on the following assumptions concerning the total net amount at risk for each possible band:

Assumption 1: For bands 2 through next to last, the total net amount at risk is assumed to be the mid-point of the range, and

Assumption 2: For the last band, the total net amount at risk is assumed to be double the lower end of the band.

For the net amount at risk bands considered in the UL4 policy, these assumptions imply the following total net amount at risk values:

Band	Range	Assumed Total Net Amount at Risk
1	$0 – $100,000	N/A
2	$100,001 – $300,000	$200,000
3	$300,001 – $500,000	$400,000
4	$500,001 – $1,000,000	$750,000
5	$1,00,001 and above	$2,000,000

I note that these bands apply for the 2001 pricing and the 2005 repricing of the UL4 policy.

[41] For a net amount at risk of $800,000, the effective cost of insurance rate is lower than for a net amount at risk of $750,000 because in the former case a higher fraction of the total net amount at risk falls in band 4 and lower fractions fall in bands 1 through 3.

There are potentially a very large number of comparisons that can be made, depending on the issue age, sex, rate class, and net amount at risk in the policy. I have summarized these comparisons for two issue ages, 30 and 50 years, across sex, rate class, and net amount at risk band. The results are reported in Tables 9 – 12 below.

UL4 – 2001 Pricing

The pricing assumptions for the UL4 policy in 2001 indicate that current mortality is based on the 1975-80 SOA table modified by the Lincoln National factors.[42] USAA Life produced the 75-80 SOA mortality table with Manulife extension to ages beyond 70 and the Lincoln National factors.[43]

For each sex, issue age, and duration, the Lincoln National Factors are given for five risk classes and three net amount at risk bands. This allows calculation of modified mortality rates across sex, risk class, and band for a desired issue age and duration length by multiplying the relevant 75-80 mortality rate by the appropriate Lincoln National factor. The resulting modified mortality rates are then divided by 12 to convert them to mortality-only monthly cost of insurance rates.[44]

Table 10 reports the comparison of actual and mortality-only cost of insurance rates. An entry in this table indicates the number of policy years between the issue age and attained age 94 for which the mortality-only cost of insurance rate would be higher than the corresponding actual rate.

[42] Spegele/USAA Life 003930, at 932.

[43] When the 75-80 mortality table received from USAA Life is compared to the similar table obtained from the SOA database, the exact same mortality rates for issue ages 0, 5, 10, 15 …, 70 is observed, with slightly different variations for intervening years. These discrepancies would not have caused any difference in the results if I had used the original SOA tables.

[44] More precisely, the modified mortality rate expressed as a fraction of 1,000 lives is multiplied by 1,000 and divided by 12 to calculate a mortality-only monthly cost of insurance rate per $1,000 of coverage.

Table 10 – UL4 2001. Number of Policy Years where Mortality-Only Cost of Insurance Rates Are Higher than Corresponding Actual Cost of Insurance Rates

		Male					Female				
Issue Age	Risk	Band 1	Band 2	Band 3	Band 4	Band 5	Band 1	Band 2	Band 3	Band 4	Band 5
30 (total 65 policy years)	PUL	40	46	46	47	47	34	35	36	37	37
	PLS	35	40	41	42	42	25	33	34	34	34
	PRF	6	35	38	39	39	8	21	26	31	32
	SPL	2	34	35	36	36	0	7	24	30	32
	STD	0	0	14	20	26	0	0	0	0	0
50 (total 45 policy years)	PUL	10	17	21	23	25	11	19	21	22	22
	PLS	4	8	10	10	11	0	10	11	11	12
	PRF	1	5	6	7	7	0	5	7	7	8
	SPL	0	3	9	10	11	0	0	0	0	4
	STD	0	0	0	0	0	0	0	0	0	0

I note that the Lincoln National Factors are provided for three bands while the current cost of insurance rates are specified for five net amount at risk bands. I understand that there is an approximate correspondence between these two sets of bands so that cost of insurance bands 1 and 2 correspond to Lincoln Factors band 1; cost of insurance bands 3 and 4 correspond to Lincoln National Factors band 2; and cost of insurance band 5 corresponds to Lincoln National Factors band 3.[45]

The general pattern observed in Table 10 is that USAA Life's actual cost of insurance rates are higher than mortality-only cost of insurance rates for the early policy years and lower for the later years of the policy. In practical terms, this means Plaintiff is proposing to charge higher rates to older people and lower rates to younger people. To illustrate this pattern, Figures 6 and 7 below plot USAA Life's current cost of insurance rate schedule and the corresponding mortality-only cost of insurance schedule for the following insured:

Issue Age: 30
Sex: Female
Risk Class: Preferred Plus (PLS)

[45] 2019-08-19 Supplemental Interrogatory Responses, at Response No.11.

Figure 6. Cost of Insurance Rate Comparison – Net Amount at Risk Band 1

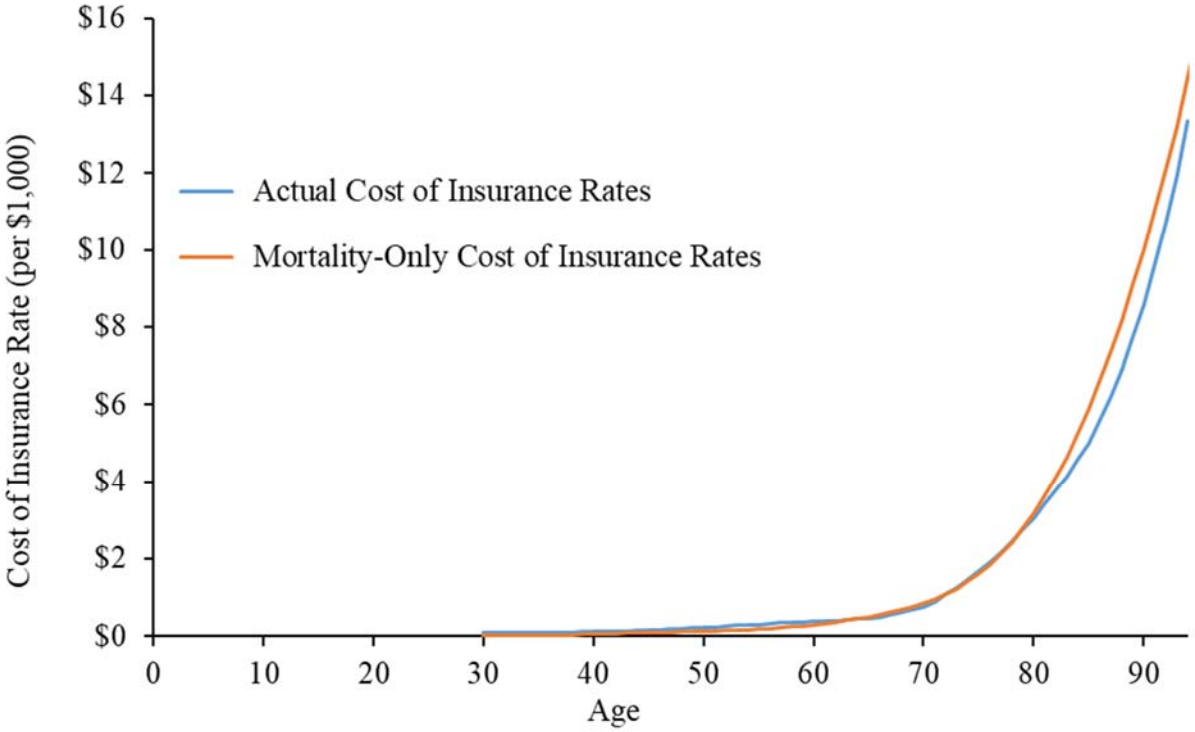
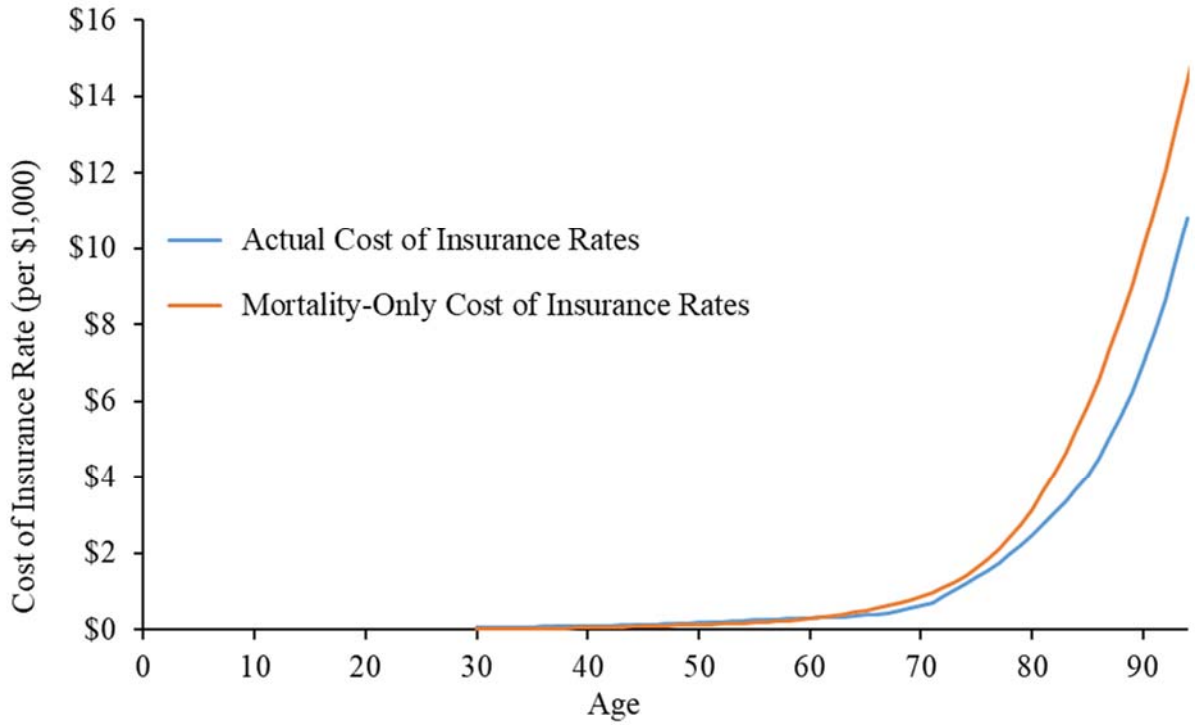


Figure 7. Cost of Insurance Rate Comparison – Net Amount at Risk Band 3



For these two comparisons, as indicated in Table 10 above, the number of mortality-only cost of insurance rates higher than the corresponding actual rates are 25 for net amount at risk band 1 and 34 for band 3. Table 10 also shows that the comparison results are similar for net amount at risk bands 2 through 5 for each sex, risk classification, and issue age combination.

As shown in Figures 6 and 7, and more generally in Tables 10 – 13, some policyholders in the class would be worse off by switching to the mortality-only rates. Furthermore, since the assessment of future rates has not yet occurred for in-force policies, it is not possible to determine which policyholders would benefit or be damaged by replacing current cost of insurance rates, even with individualized inquiries.

Effective Cost of Insurance Rates

Table 11 reports cost of insurance rate comparisons when effective cost of insurance rates are used. Effective cost of insurance rates are calculated following the approach described earlier in this section.

Table 11 – UL4 2001. Number of Policy Years where Mortality-Only Cost of Insurance Rates Are Higher than Corresponding Effective Cost of Insurance Rates

		Male					Female				
Issue Age	Risk	Band 1	Band 2	Band 3	Band 4	Band 5	Band 1	Band 2	Band 3	Band 4	Band 5
30 (total 65 policy years)	PUL	40	43	44	45	46	34	34	35	35	36
	PLS	35	39	39	40	41	25	32	33	33	34
	PRF	6	19	27	35	39	8	15	20	23	29
	SPL	2	29	32	34	35	0	0	4	8	29
	STD	0	0	0	2	16	0	0	0	0	0
50 (total 45 policy years)	PUL	10	12	13	18	22	11	12	17	20	21
	PLS	4	6	8	9	10	0	7	9	10	11
	PRF	1	3	4	5	7	0	0	3	5	7
	SPL	0	0	0	6	10	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0

Figures 8 and 9 illustrate the effective cost of insurance rate comparison for the same case as in Figures 6 and 7, a policy with issue age 30 for a Female in the Preferred Plus (PLS) risk class:

Figure 8. Cost of Insurance Rate Comparison – Net Amount at Risk Band 1

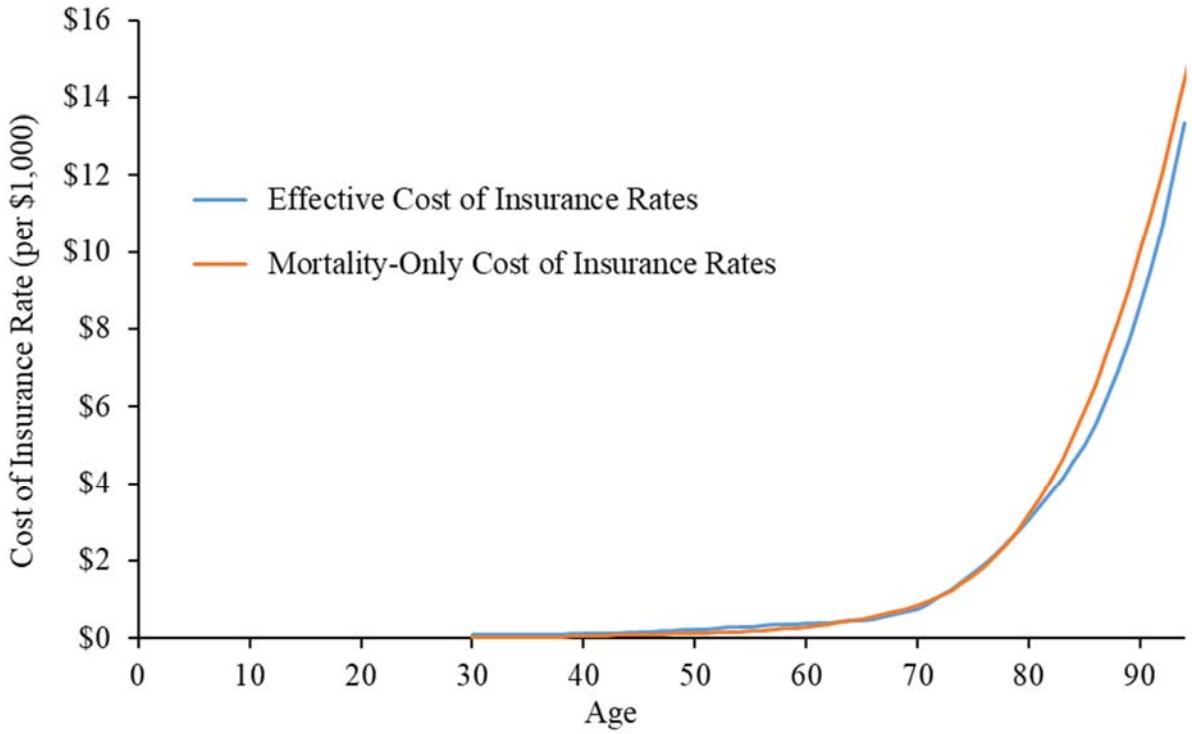
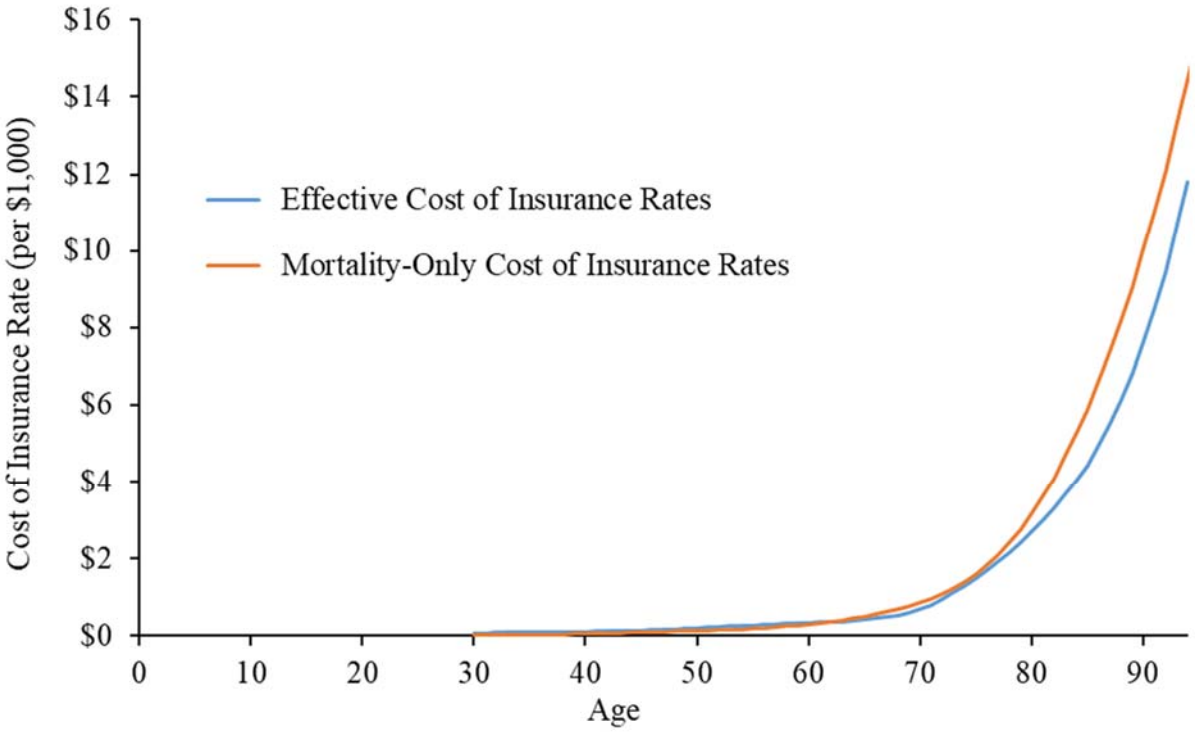


Figure 9. Cost of Insurance Rate Comparison – Net Amount at Risk Band 3



I note that there is no difference between Figures 6 and 8, and for any results corresponding to net amount at risk band 1 in Tables 9 and 10, because the effective and current cost of insurance rates coincide. In comparing Figures 7 and 9, for net amount at risk band 3, it can be observed that, for the years where mortality-only rates are higher than the effective rates in Figure 9, the effective rates are closer to their corresponding mortality-only rates than is the case when current rates are considered. This is because effective cost of insurance rates are generally higher than the corresponding current cost of insurance rates due to the ratcheted nature of the charge calculation.

UL4 – 2005 Repricing

The 2005 repricing of the UL4 policy substituted the ING multipliers for the Lincoln National Factors.[46] The ING multipliers vary by sex, risk class, and band (four bands).[47] I understand that there is an approximate correspondence between these two sets of bands so that cost of insurance bands 1 and 2 correspond to ING Multipliers band 1, and cost of insurance bands 3, 4, and 5 correspond to ING multipliers bands 2, 3, and 4, respectively.[48]

Table 12 reports the comparison of current and mortality-only cost of insurance rates. The interpretation is the same as in the case of Tables 9 and 10. An entry in this table indicates the number of policy years between the issue age and attained age 94 for which the mortality-only cost of insurance rate would be higher than the corresponding current rate.

[46] Spegele/USAA Life 005216, at 217.

[47] The ING multipliers received are given for issue ages 0, 5, 10, 15 … 85. For my purpose this is not a limitation since the issue ages reported on are 30 and 50.

[48] 2019-08-19 Supplemental Interrogatory Responses, at Response No.11.

Table 12 – UL4 2005. Number of Policy Years where Mortality-Only Cost of Insurance Rates Are Higher than Corresponding Current Cost of Insurance Rates

		Male					Female				
Issue Age	Risk	Band 1	Band 2	Band 3	Band 4	Band 5	Band 1	Band 2	Band 3	Band 4	Band 5
30 (total 65 policy years)	PUL	12	31	32	32	32	16	32	32	32	32
	PLS	0	28	28	29	29	0	29	30	30	30
	PRF	0	25	27	27	27	0	28	29	29	29
	SPL	0	27	28	28	29	0	28	29	29	29
	STD	0	23	24	25	25	0	26	27	27	27
50 (total 45 policy years)	PUL	4	21	21	21	21	0	25	25	25	25
	PLS	0	18	18	18	18	0	19	19	19	19
	PRF	0	18	18	18	18	0	19	19	19	19
	SPL	0	20	21	21	20	0	21	21	21	21
	STD	0	19	20	20	19	0	20	20	19	20

For Band 1, I note that mortality-only cost of insurance rates are generally below current rates except for a few policy years at risk class Preferred Ultra. For Bands 3-5, the results are similar to those observed in the UL4 2001 and UL4 2005 cases, with a significant number of policy years where the mortality-only cost of insurance rate is higher than the corresponding actual rate.

As in the case of the 2001 pricing, I illustrate, in Figures 10 and 11, the cost of insurance rate schedule comparison for the same following insured:

Issue Age: 30
Sex: Female
Risk Class: Preferred Plus (PLS)

Figure 10. Cost of Insurance Rate Comparison – Net Amount at Risk Band 1

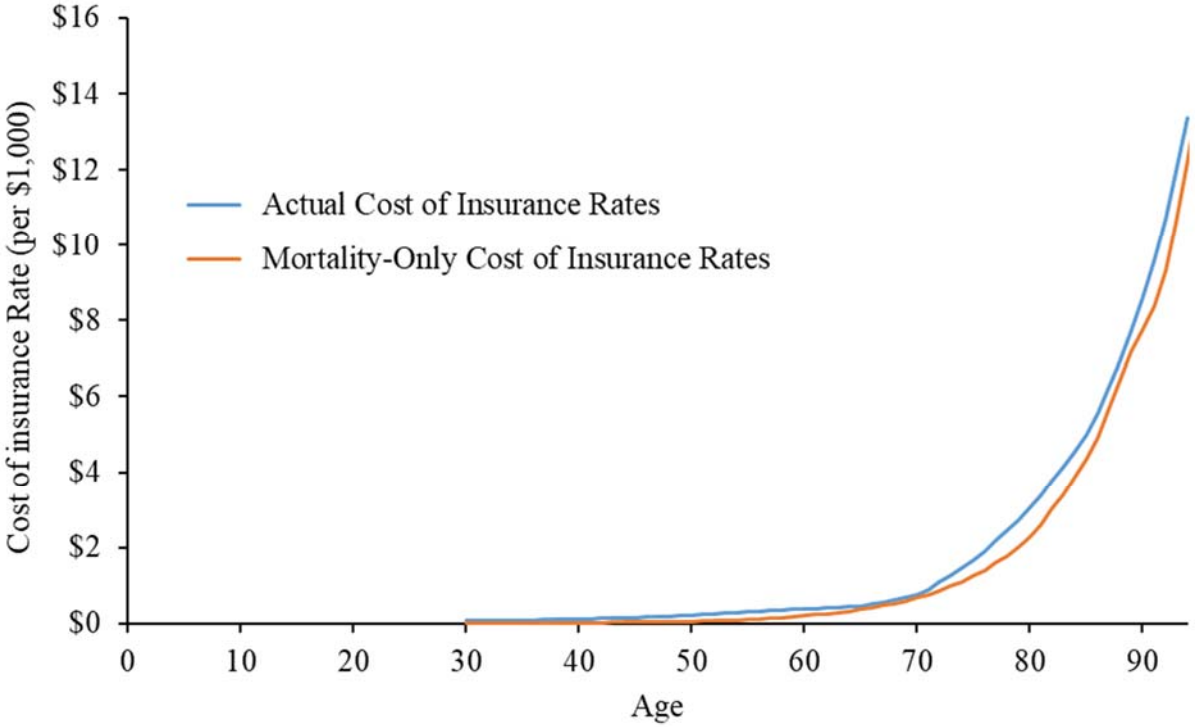
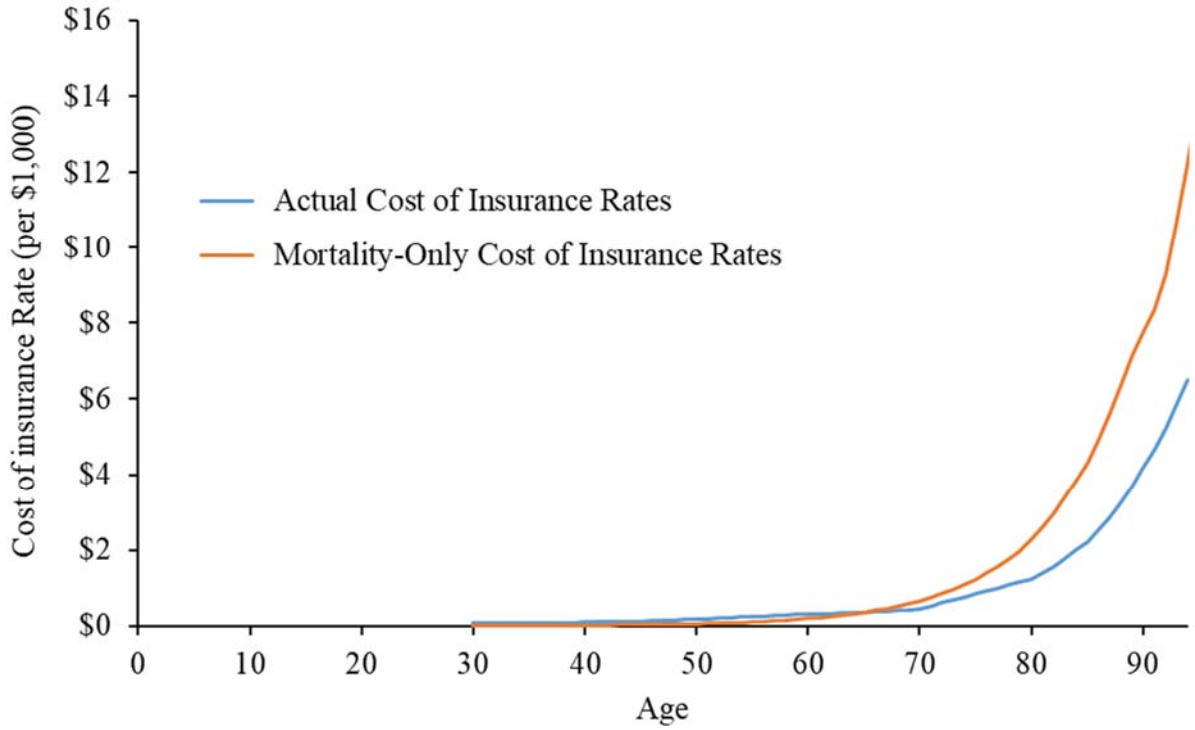


Figure 11. Cost of Insurance Rate Comparison – Net Amount at Risk Band 3



Effective Cost of Insurance Rates

Table 13 reports cost of insurance rate comparisons when effective cost of insurance rates are used. Effective rates are calculated following the same approach as in the 2001 pricing of the UL4 policy described above.

Table 13 – UL4 2005. Number of Policy Years where Mortality-Only Cost of Insurance Rates Are Higher than Corresponding Effective Cost of Insurance Rates

		Male					Female				
Issue Age	Risk	Band 1	Band 2	Band 3	Band 4	Band 5	Band 1	Band 2	Band 3	Band 4	Band 5
30 (total 65 policy years)	PUL	12	30	30	31	31	16	30	31	31	32
	PLS	0	15	23	26	28	0	21	28	29	29
	PRF	0	9	17	23	25	0	10	25	28	28
	SPL	0	15	23	26	27	0	20	27	28	29
	STD	0	0	15	18	22	0	0	14	25	26
50 (total 45 policy years)	PUL	4	13	16	18	19	0	15	18	19	21
	PLS	0	9	14	16	17	0	10	15	16	18
	PRF	0	6	12	16	17	0	8	15	16	18
	SPL	0	9	16	18	19	0	0	13	18	20
	STD	0	0	15	17	18	0	0	3	16	18

Illustrations comparable to Figures 10 and 11 when effective cost of insurance rates are used are shown in Figures 12 and 13.

Figure 12. Cost of Insurance Rate Comparison – Net Amount at Risk Band 1

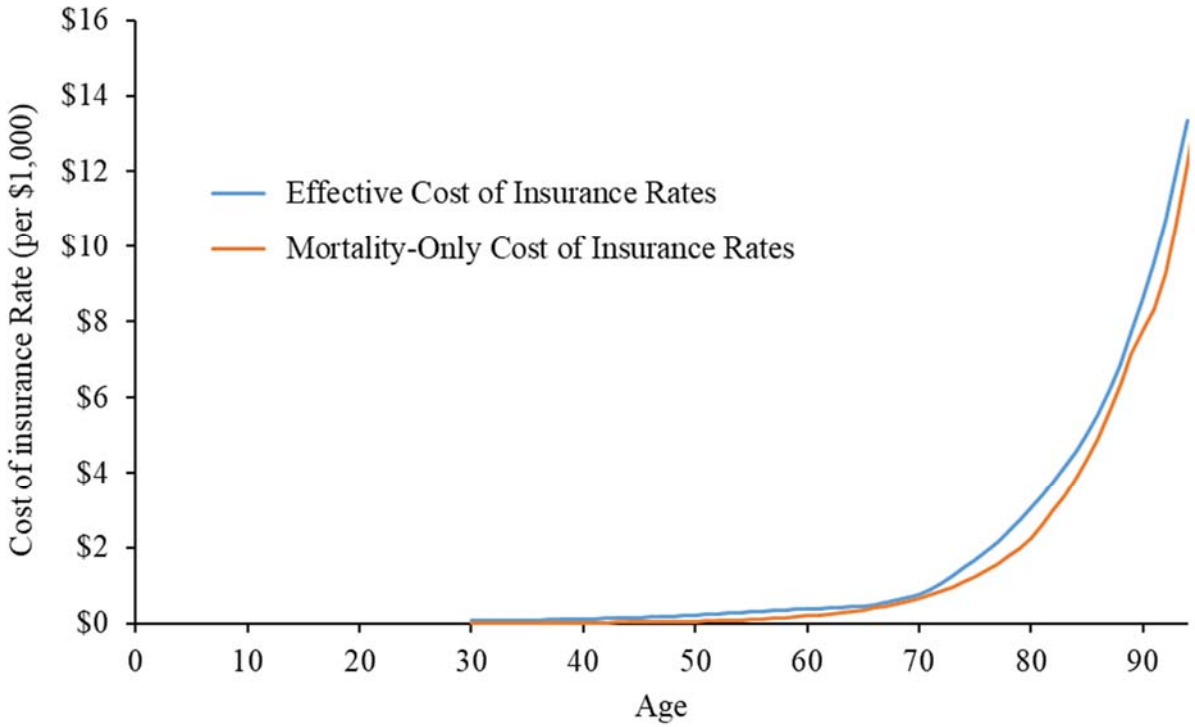
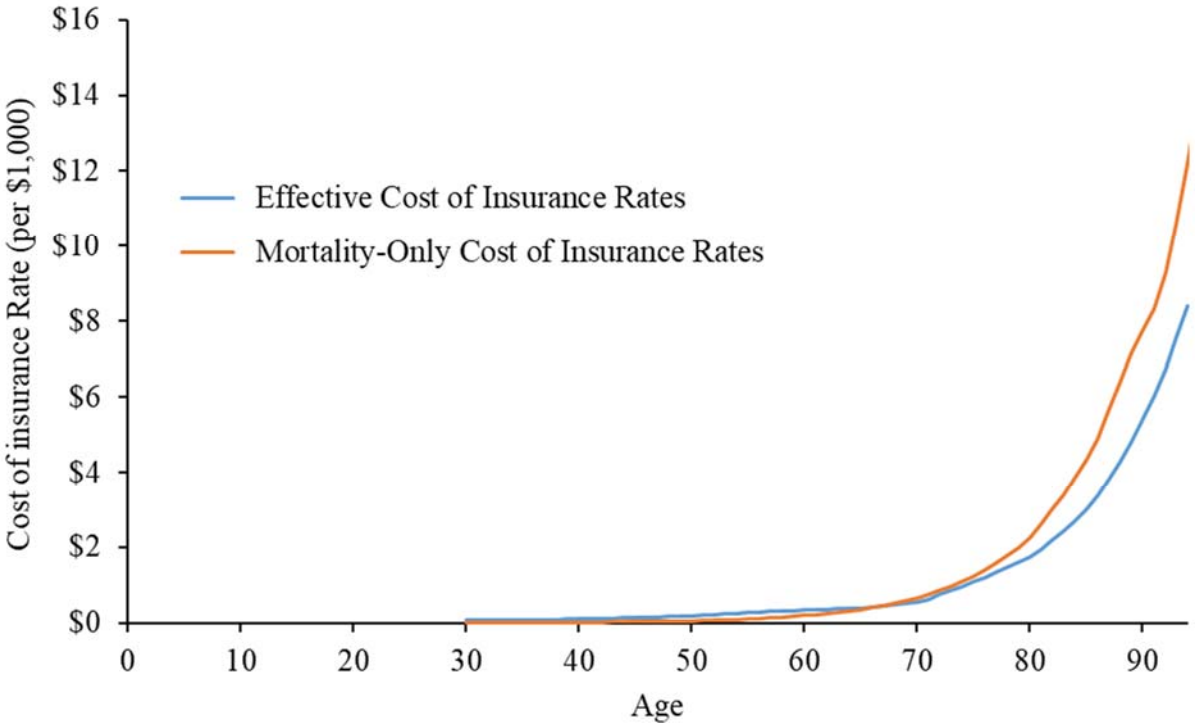


Figure 13. Cost of Insurance Rate Comparison – Net Amount at Risk Band 3



From the comparison of USAA Life's current cost of insurance and mortality-only rate schedules, replacing the former with the latter would introduce intra-class conflicts. Also, replacing USAA Life's current cost of insurance rates with mortality-only rates could destroy the balance that USAA Life's iterative actuarial process achieves in creating a self-supporting insurance policy that (1) meets the regulatory criteria and policy requirements, (2) bases current rates on the age, sex, and risk class of the insureds, as well as expectations about future mortality, (3) incorporates USAA Life's assumptions such as lapse behavior, premium persistency, and (4) meets USAA Life's profitability and other financial targets.

The comparisons between current or effective cost of insurance rate schedules on one side and mortality-only rate schedules on the other, illustrated in this section for the UL4 policy, can also be done for the UL3 policy. The results are qualitatively similar.

As discussed above, USAA Life's pricing assumptions involve assessments of USAA Life's past experience and assumptions about the future, including experienced mortality, lapse behavior, premium persistency, and other factors. A change in the cost of insurance rate schedule as requested by Plaintiff may alter how policyholders use their policies, possibly affecting lapses, premium persistency and, indirectly, mortality experience due to a changed age and risk class policy distribution. These potential changes in policyholder behavior are impossible to predict when rate schedules are changed because of the time needed to obtain enough data to develop reliable pricing assumptions. Mr. Witt's damages model works in a vacuum when it relies on policyholder history as it actually happened and imposes his rate schedule. A realistic retroactive implementation of cost of insurance rates would require an inquiry into whether, when, and to what extent policyholders would have changed their decisions around lapse, policy loans, premium payments, cash withdrawals, etc. if the new rates had been in place. There is no way to answer this question without asking individual policyholders.

IX. Mr. Witt's Report

Plaintiff's Expert has submitted a Declaration and Report in Support of Class Certification dated December 20, 2019, where he describes his damages calculation methodology, explains how, in his view, it can be applied to all policies in the class, and demonstrates his methodology by calculating damages for one claim for Mr. Spegele's policy. Witt's methodology appears to apply to Count III damages, as asserted in the complaint (i.e., damages based on the theory that

USAA Life did not incorporate mortality improvements in its cost of insurance rate schedules), but in his deposition he explained that he was only calculating damages for Count I (i.e., damages based on the theory that USAA Life did not use mortality-only cost of insurance rates).

There is a third component of alleged damages that Mr. Witt considers but does not incorporate in his calculations. This component is the alleged damage resulting from the alleged inclusion of expenses in the cost of insurance rate schedules (Count II damages in the Complaint).[49] With respect to this alleged damage, Mr. Witt says nothing about how "amounts determined to be in excess of any limit provided by the expense change provisions"[50] will actually be determined.

Mr. Witt describes his damages methodology for Counts I, II, and III in paragraphs 64 through 73 of his report. But the damages he calculates for Mr. Spegele's policy include Count I and, partially, in my view, Count III damages. I say "partially" because while the table on page 33 of his report includes a column labeled "2017 Mortality," the table on page 43 and the damages based on this table do not include the corresponding mortality-only cost of insurance rates.

In fact, the column labeled "Spegele Monthly Mortality" in the table on page 43 of Witt's report includes mortality-only cost of insurance rates based on the "1987 Original Mortality" (policy years 1-3), the "1994 Repricing Mortality" (policy years 4-10), the "2001 Mortality" (policy years 11-14), and the "2005 Mortality" (policy years 15-28). Since USAA Life's cost of insurance rates for the UL3 policy did not change after 1994, the alleged damage, as estimated by Mr. Witt, to the Spegele policy due to the 2001 and 2005 mortality changes should, in my view, be considered Count III damage.

In his deposition, however, Mr. Witt is more explicit about his interpretation of Counts I, II, and III damages. First, he states that his calculation of the Spegele policy damage does not include Count III damages. Then, he states that Count I and Count II damages are identical:[51]

> Q And you show total damages here of $2,190.84, yes?
>
> A Yes.

[49] Witt Declaration, ¶ 71.

[50] Witt Declaration, ¶ 71.

[51] Witt Deposition, page 64:10-19.

> Q Is that showing damages for the count one theory, the count two theory, or the count three theory or some combination?
>
> MR. LYTLE: Object to the form.
>
> THE WITNESS: The count one theory. Also, my understanding is that that's also the count two damages, and then count three is not addressed by this spreadsheet.

And then, on page 70, he states his understanding of the relationship between Count I and Count II damages: [52]

> My understanding is that the calculation that I have performed here takes the viewpoint that any charge in the COI rate that's above and beyond the expected mortality is viewed as an expense, and as such the count two damages would be identical to count one.

Mr. Witt's testimony is also more explicit than his report is about his understanding of the calculation of damages under Counts I and III, with respect to the relationship between USAA Life's cost of insurance rates and his mortality-only cost of insurance rates. Mr. Witt states that Counts I and III damages are based on selecting, for each policy and policy month in the historical record, the lesser of the two rates, rather than substituting mortality-only rates for USAA Life's actual rates. This is an egregiously unreliable approach. It is neither consistent with USAA Life's approach to cost of insurance rates nor with Plaintiff's theory as described in his Complaint.

Mr. Witt's method is explained in pages 55-57 of his deposition. On page 55 he states that

> … my understanding of Plaintiff's damage theory is that the goal is to strip out the excess [cost of insurance charge].

On page 56 he explains further,

> … the rate that would be used in my calculation is really the lesser of the expected mortality rate or the actually charged COI rate, because my understanding of Plaintiff's theory is that the breach was any charge that was in excess of expected mortality. There's no contractual – my understanding, there's no contractual prohibition of the company charging less than expected mortality.

Asked again at his deposition if his calculation is the substitution of mortality-only cost of insurance rates for USAA Life's actual rates, Mr. Witt adds, on page 57:

[52] Witt Deposition, page 70:14-19.

> I'm not an attorney. I can just tell you my understanding of what I was asked to do. And my understanding is it is not a straight substitution. My understanding is that Plaintiff's position is that USAA is free to charge less than the expected mortality if they wish, but they are contractually prohibited from charging more. What I'm quantifying are the instances where they charged more.

This theory of damages is inconsistent with any actuarial approach with which I am familiar when it comes to pricing. Nor did I see this theory appear anywhere in the written Witt report. In this respect it is interesting to note that Mr. Witt considers his report both a statement of actuarial opinion and not rising to the level of an actuarial opinion. On pages 36 and 37, he states about his report,

> Q Yeah, it's not -- is Exhibit 1 a statement of actuarial opinion?
>
> A I intend for it to be to the extent that it contains actuarial opinions. I would have no problem with it being labeled as a statement of actuarial opinion, but in my work I have always been reluctant to use a sledgehammer to drive in a nail. …
>
> … personally I don't see this rising to the level of a statement of actuarial opinion.

I have addressed Mr. Witt's inconsistent approach in Section IV above. In this section I have pointed out the differences between the opinions expressed in his report and the testimony in his deposition. In the reminder of this section I address the retrospective nature of Mr. Witt's damages approach.

Mr. Witt claims that his damages calculation requires historical data that USAA Life keeps in its records and that these damages can be "calculated to a reasonable degree of actuarial and mathematical certainty" by using the same approach he used in the case of Mr. Spegele.

There are policies, however, for which USAA Life does not seem to have the historical records that Mr. Witt would need to carry out his calculations. USAA Life does not have data prior to 1997 due to its conversion from one data system to another.[53] Also, the company does not keep records for policies terminated before March 1999.[54] In these cases, Mr. Witt proposes a method of linear growth extrapolation to estimate cash values and alleged overcharges, based on an assumption of scheduled premiums.[55] Mr. Witt does not explain how reasonable his assumption of scheduled premiums is given the possibility of depositing variable premiums in

[53] Witt Declaration, ¶ 78.
[54] Witt Declaration, ¶ 78.
[55] Witt Declaration, ¶¶ 79-80.

the policy, different from the scheduled premium that may have been intended when a policy was issued.

The damages calculation Mr. Witt proposes in his report is also strictly historical. It does not address how USAA Life's actual cost of insurance rates may compare to his corresponding mortality-only cost of insurance rates in future years. Rather, it only compares the cost of insurance rates that USAA Life has used with its UL3 and UL4 policies in the past to the corresponding mortality-only rates he has determined. As I have shown above, there are many cases where both current and effective cost of insurance rates will be below mortality-only rates. The total impact of substituting Mr. Witt's rates for the actual rates used by USAA Life is not known today. This makes it impossible to determine which policyholders in the proposed class would be better off and which would be worse off under Mr. Witt's approach. In the next section, I explore in more detail the intra-class conflicts that arise from the fact that mortality-only rates are not uniformly below the corresponding rates actually used by USAA Life.

X. Qualitative Explanation of Intra-Class Conflicts

A consideration of what type of policyholder, among the members of the proposed class, stands to benefit from replacing USAA Life's current cost of insurance rate schedules with Mr. Witt's mortality-only rates is key to determining whether there are conflicts among the proposed class members. The class definition used by Plaintiff is:[56]

> All persons who own or owned a Universal Life 3 and/or a Universal Life 4 life insurance policy issued or administered by Defendant, or its predecessors in interest, that was active as of March 1999.

I understand that this definition of the class would include all policyholders who owned or own any of the UL3 and UL4 policies described in the foregoing sections. Plaintiff describes his requested damages as follows: [57]

> 75. As a direct and proximate result of Defendant's conduct, Plaintiff and the class have been damaged, and these damages are continuing in nature.

[56] Declaration and Report of Scott J. Witt, paragraph 11, page 7.

[57] Complaint, paragraphs 75 and 76, page 14.

76. Although requiring expert testimony, the amounts of unauthorized cost of insurance charges and expense charges Defendant took from Plaintiff and the class are capable of determination, to an identified sum, by comparing Plaintiff's actual cost of insurance charge each month to a cost of insurance charge computed using a monthly cost of insurance rate determined using Defendant's expectations as to future mortality experience.

I have explained in Section VIII above how I have calculated mortality-only cost of insurance rates based on USAA Life's expectations as to future mortality. Based on my calculations I have shown that mortality-only rates for any given combination of sex, risk classification, and net amount at risk band do not have a simple and uniform relationship to the corresponding rates actually used by USAA Life. In some cases, mortality-only rates are higher than the corresponding actual rates, and in other cases they are below.

Based on the results of my calculations I reach several conclusions, all of which are related to one another.

First, Plaintiff's damages model creates winners and losers within the proposed class. Under Plaintiff's theory and Mr. Witt's proposed methodology, there will be policyholders in the proposed class who would be better off and policyholders who would be worse off under Plaintiff's proposed approach. In effect, this would create negative damages in some cases. Policyholders might then want to opt out of any class or retroactively change their behavior. Either of these would, in effect, introduce an option in the policy contract that was not contemplated in the original policy design and pricing. The option that would be introduced is for policyholders to go back in time and change their decisions, if it is in their best interest to do so. The problem with this option, unlike a conventional stock option, is that the decision to exercise it does not depend on an objective, rational and measurable outcome outside the option holder's (that is the policyholder's) subjective control.

Second, substituting a hypothetical mortality-only rate schedule for the actual rate schedule would make some proposed class members worse off. In some cases, this substitution could make a given policyholder either worse off or better off, depending on how his or her behavior as a policyholder would change in the future, or would have changed in the past, because of the substitution. Possible cases include the following:

- If the policyholder intends to use the policy for a long time, and to use the cash value to pay future premiums, then the significantly higher mortality-only rates that will eventually kick in may lead to a lapse of the policy when it is needed most.
- If the policyholder plans to take out loans from the policy later in the life of the policy, perhaps during retirement, significantly higher alternative cost of insurance rates may reduce the amount available to be borrowed.

These examples illustrate the pitfalls to which Plaintiff's damage theory leads, due to the uncertainty surrounding policy-specific behavior by policyholders.

Third, Plaintiff's damage theory implies a complete disregard for the actuarial process that determines current cost of insurance rates in conjunction with other features of the policy designed to (1) meet regulatory criteria and policy requirements, (2) base current cost of insurance rates on the age, sex, and risk class of the insureds, (3) reflect USAA Life's assumptions about things like lapse behavior, premium persistency, age, and policy size distribution, and (4) meet USAA Life's profitability and other financial targets. Plaintiff's theory operates with no regard for the sustainability of USAA Life's universal life insurance business.

The assumptions that USAA Life's actuaries must make when pricing or repricing universal life policies are not restricted to USAA Life's expectations as to its future mortality in the strict sense that I have used this term in constructing hypothetical mortality-only cost of insurance rates. There is a wider meaning of USAA Life's mortality experience, as I have explained when discussing the bottom panel of Table 1 above. And there is also the set of assumptions that USAA Life's actuaries must make concerning lapse behavior, premium persistency, age and policy size distribution. Because of the uncertainty surrounding these parameters, it makes sense to establish a relationship between cost of insurance rates and USAA Life's mortality experience that is less rigid than the one under Plaintiff's damage theory. This more flexible relationship is known and well understood in practice. Basic insurance textbooks discuss the fact that cost of insurance rates can include margins or adjustments and need not be limited to mortality probabilities. [58] Cost of insurance rate schedules must account for the fact that if, for instance, an

[58] See, for example, Principles of Risk Management and Insurance 4e, George Rejda, p. 365.

insured dies early in the life of a policy, then expenses associated with insuring against mortality risk are spread over fewer years.

Specific Examples of Intra-Class Conflicts

Tables 10 through 13 in Section VIII document many instances where, for a given sex, issue age, and risk class combination, mortality-only cost of insurance rates are higher than USAA Life's cost of insurance rates in some policy years and lower in other policy years. This is the root cause of intra-class conflict that arises when a cost of insurance schedule is retroactively imposed, as Plaintiff has proposed in this case. Even when a policyholder would appear to benefit from the imposition of mortality-only rates, over time or based on policyholder decisions, they may find themselves harmed when mortality-only rates are used. Determining which policyholders may be harmed over time by using mortality-only rates would require individual inquiries.

It is not possible to determine whether a policyholder would have been damaged by the change in cost of insurance rates based solely on information in the policyholder's file. The harm or benefit of using mortality-only rates may only be determined by examining the future conduct of the policyholder, which cannot be known in the present.

By policyholder conduct I mean decisions by the policyholder that affect the duration, cash value, and specified amount of the policy:

- Whether to continue, terminate, or lapse the policy;
- Whether to increase the specified amount of the policy;
- Whether to alter the frequency and amounts of premiums to be deposited into the policy;
- Whether to withdraw amounts from the policy's cash value.

Future policyholder conduct may cause harm, depending on how it manifests itself. I describe a few examples next.

Example 1. Future Decision to Extend the Policy

USAA Life has experienced lower lapse rates than originally projected, likely due, in part, to the increased attractiveness of relatively high minimum guaranteed interest rates. But a policyholder who may be contemplating continuing a policy for longer than previously

anticipated due, for instance, to the relatively high minimum interest rates, may be harmed because he or she is at an attained age where future mortality-only cost of insurance rates would be higher than the actual current rates. This could happen even if current rates over the first few future months were still above mortality-only rates because the mortality-only rates could quickly spike upwards. The policyholder may also face these higher mortality-only rates for a potentially large number of months, depending on the policyholder's interest in taking advantage of relatively high minimum guaranteed interest rates. (For example, Mr. Spegele's minimum guaranteed interest rate is 4.5% and the cash value in his policy has been earning this rate during the recent past of near-zero interest rates.)

More specifically for this example, I consider a male who purchased a UL4 policy with issue age 65 shortly after the 2005 repricing of the policy. For this policyholder I assume the following characteristics:

- Sex: Male
- Issue Age: 65
- Risk Class: Preferred Ultra (PUL)
- Net Amount at Risk: $400,000
- Net Amount at Risk Band: 3

Figure 14 shows the comparison of actual USAA Life's cost of insurance rates with Mr. Witt's mortality-only rates. In Section VIII I have discussed the calculation of cost of insurance charges based on effective cost of insurance rates, rather than actual rates. For this reason, I also include Figure 15, which more accurately illustrates the impact of cost of insurance rates on cost of insurance charges for net amount at risk bands other than 1.[59]

Figure 14 shows that around age 77 (that is, in policy year 13) the mortality-only cost of insurance rate is greater than the marginal actual rate for net amount at risk band 3. Since the effective cost of insurance rate is generally higher than the corresponding marginal actual cost of insurance rate, Figure 15 shows that the age at which the mortality-only rate begins to be higher

[59] Mr. Witt refers to an "effective COI Rate" in paragraph 67 of his report, indicating that he would calculate it as a "weighted average of the COI Rates applied to each band." Although he does not give many details of how he would calculate effective cost of insurance rates, his method appears to be similar to the detailed approach I have described in Section VIII.

than the corresponding effective rate is also higher, around 83 in this case, about three years from the present.

The implications of this decision are that the policyholder could end up being harmed using mortality-only cost of insurance rates.

Figure 14. Cost of Insurance Comparison – Using Actual Cost of Insurance Rates

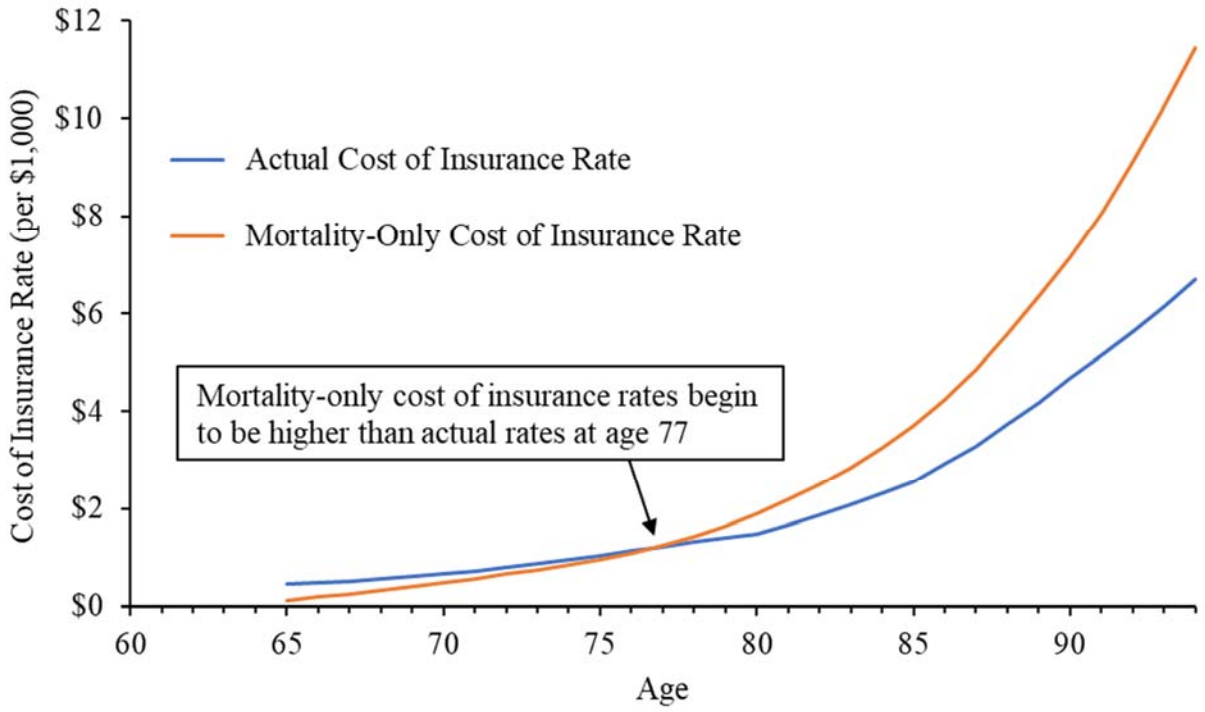
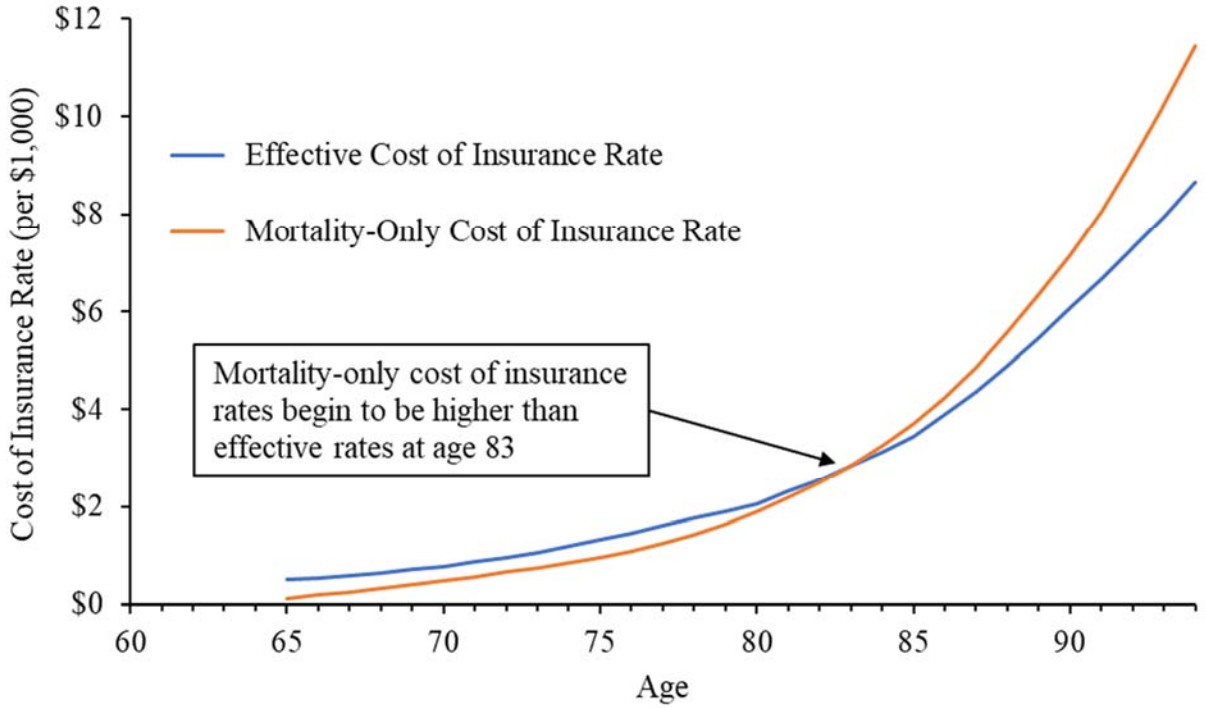


Figure 15 illustrates the possibility that a policyholder who was assessed cost of insurance rates higher than corresponding mortality-only rates in the past may be charged higher mortality-only rates in the future if he continues and extends his policy to, for example, continue receiving the relatively favorable minimum guaranteed interest rate.

Figure 15. Cost of Insurance Comparison – Using Effective Cost of Insurance Rates



Example 2. Future Decision to Increase the Specified Amount

In this case, a policyholder may also face future harm if they decide to increase the specified amount. This could bring the policy into a higher net amount at risk band, which would benefit from lower USAA Life cost of insurance rates, other things being equal. In addition, Figures 6 through 13 illustrate the fact that when USAA Life cost of insurance rates are lower than mortality-only rates (generally, in the later policy years), this difference is greater for higher net amount at risk bands than for lower net amount at risk bands. This means that a policyholder who decides to increase the specified amount of the policy and moves into a higher net amount at risk band may be subject to higher mortality-only cost of insurance rates than he would have faced under USAA Life's current approach.

While this possibility could happen in any sex, issue age, and risk classification, it could particularly be the case if the policyholder is in a net amount at risk band in a case where mortality-only cost of insurance rates are below the corresponding USAA Life cost of insurance rates for all or almost all policy years. In Table 10, this would happen for a male, issue age 30, risk class standard plus (SPL), with 2 such policy years in net amount at risk band 1.

A decision, by any of the policyholders in the situation just described, to increase their specified amount could lead to mortality-only cost of insurance rates that are higher than USAA Life's current rates for many more future years than they would have been had the decision not been taken and could result in creating harm where none existed.

For this example, I consider an insured policyholder similar to the one in Example 1 but with a net amount at risk that is $200,000 initially. The decision the policyholder is considering is to increase the specified amount so that the net amount at risk becomes $400,000. This would move the policy from net amount at risk band 2 to band 3.

The policy characteristics are now:

- Sex: Male
- Issue Age: 65
- Risk Class: Preferred Ultra (PUL)
- Net Amount at Risk: $200,000 before the decision, $400,000 after
- Net Amount at Risk Band: Band 2 before the decision, 3 after

Figures 16 and 17 illustrate the cost of insurance comparison for the case before and the case after the policyholder's decision.[60] Before the decision to increase the specified amount, mortality only cost of insurance rates begin to be higher than effective rates at age 90. After the decision to increase the specified amount, the cross-over happens at age 83.

As in the previous example, but for different reasons, the implications of this decision are the same, namely that the policyholder could end up being harmed using mortality-only cost of insurance rates.

[60] I consider only effective cost of insurance rates in Figures 16 and 17.

Figure 16. Cost of Insurance Comparison – Using Effective Cost of Insurance Rates

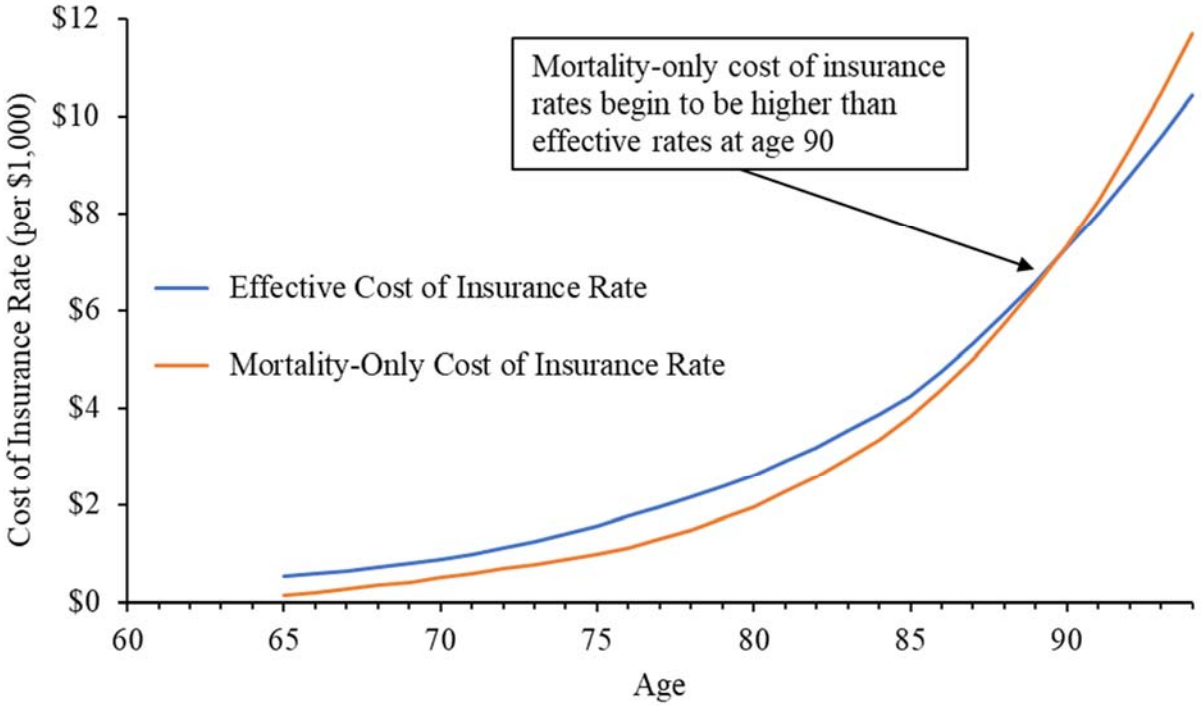
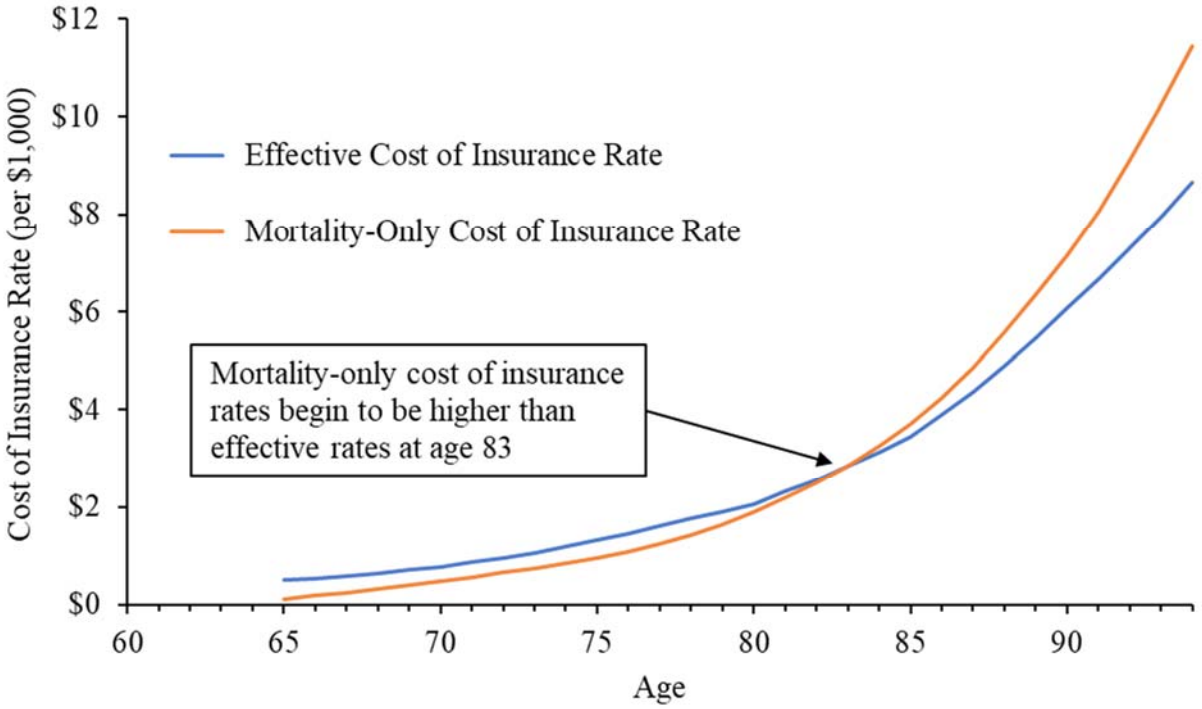


Figure 17. Cost of Insurance Comparison – Using Effective Cost of Insurance Rates



Example 3. Future Decision to Alter the Frequency and Amount of Premiums

In this case, a policyholder could face future harm under the mortality-only cost of insurance rates if the policyholder chose to reduce the frequency and amount of premiums into the policy. In this situation, future net amount at risk could increase (because the cash value would be reduced by recurrent monthly deductions, including the cost of insurance charges) with the potential effect of bringing the policy into a higher net amount at risk band. This could result in the same consequences described in Example 2 above.

Example 4. Future Decision to Withdraw Amounts from the Cash Value

If a policyholder intends to withdraw amounts from the policy's cash value and these withdrawals reduce the cash value to the extent that the net amount at risk moves into a higher band, the consequences would be similar to those described in detail in Example 2. The policyholder could end up being harmed by the higher mortality-only cost of insurance rates as compared to the actual USAA Life rates that he or she would have been assessed.

The examples above involve policyholder conduct. But even in the case of a policy were the insured has died, there may be no damage even if all the cost of insurance rates charged in the past had been Mr. Witt's mortality-only rates. This will be the case where the death benefit option is Option A, which pays the specified amount at death. Lower mortality-only cost of insurance charges would have resulted in higher cash values and lower net amounts at risk, but the death benefit would not have changed. Since the cost of insurance charges are deducted from the beginning cash value on the first day of each policy month, the premiums would not have needed to be different and the death benefit would not have changed irrespective of the rates. A policyholder in this situation would not have been damaged.

XI. Evolution of Current Cost of Insurance Rates

Contrary to Plaintiff's allegation that USAA Life did not reduce the cost of insurance rates in its policies, USAA Life did in fact reduce rates for both the UL3 and UL4 policies. These reductions were related to the general improvement in expected mortality experience. I next consider the cost of insurance rate changes for the UL3 and UL4 policies.

UL3 Policy

As part of the 1994 repricing of the UL3 policy, current cost of insurance rates were reduced for higher age ranges. The magnitude of the change, for any given age, varied by risk class more than it varied across sex. For nonsmoker policies, across all bands, there was a substantial reduction in rates as illustrated in Figure 18 below. For male smokers, current rates did not appreciably change irrespective of band, and they increased slightly for female smokers across all bands. Figures 18 and 19 show these results for Band 1.

Figure 18. Current Cost of Insurance Rates 1988 v. 1994 – Nonsmoker Band 1

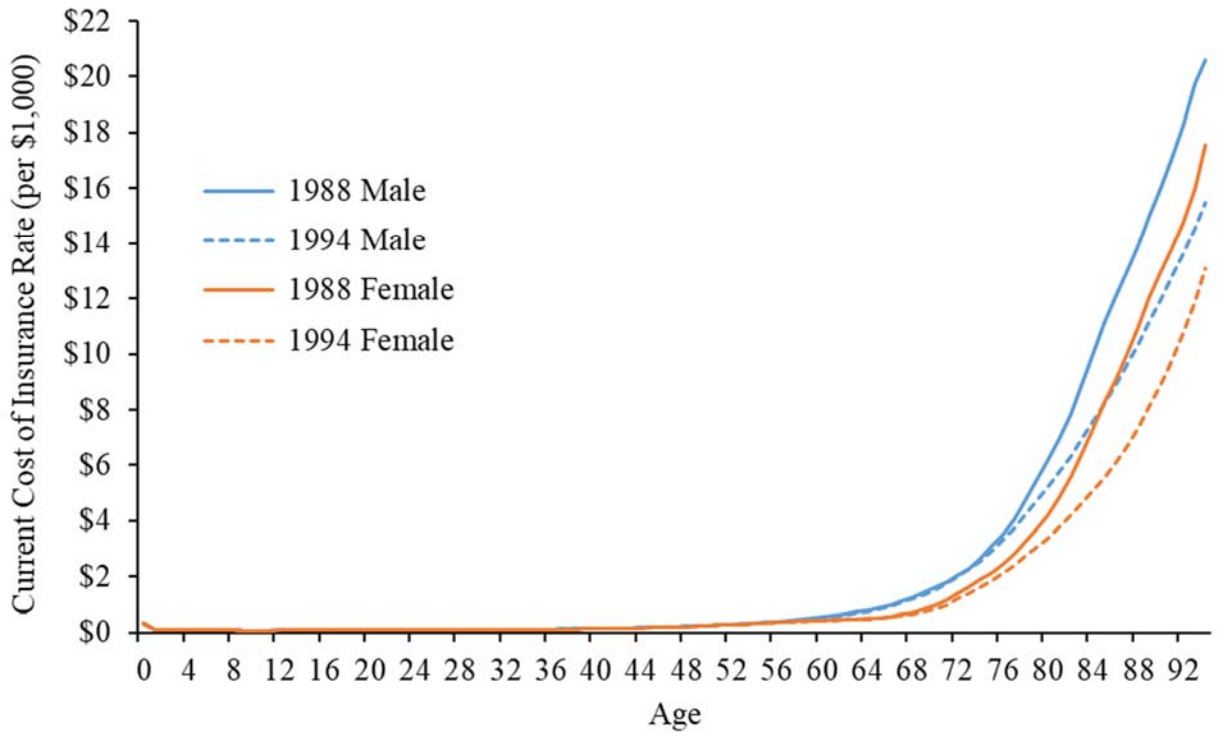
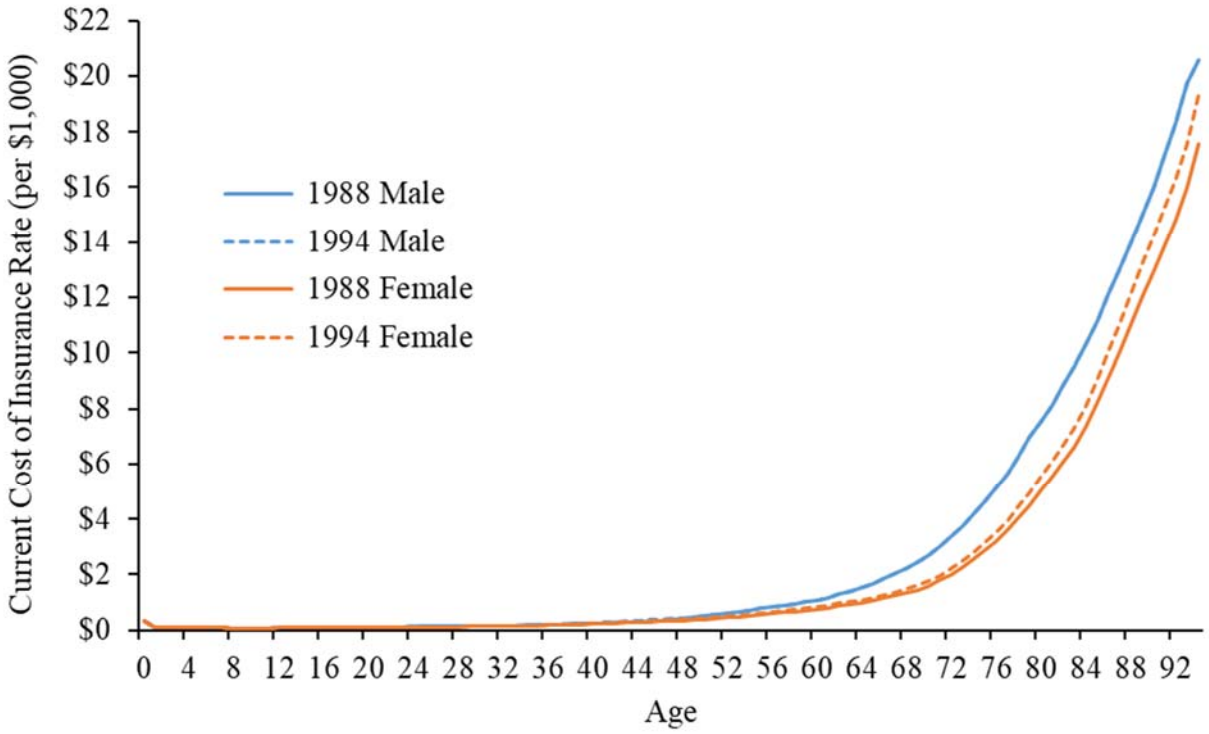


Figure 19. Current Cost of Insurance Rates 1988 v. 1994 – Smoker Band 1



UL4 Policy

For the UL4 policy, cost of insurance rates were repriced in 2005. The 2005 repricing decreased cost of insurance rates across sex and risk class for all net amount at risk bands, beginning at age 65, except for band 1, for which they remained unchanged. No rates changed from age 0 to 64. The rate reduction pattern was similar across net amount at risk bands 2 through 5. I illustrate these patterns for band 2 across all risk classes in Figures 20 through 24.

Figure 20. Current Cost of Insurance Rates 2001 v. 2005 – Preferred Ultra Band 2

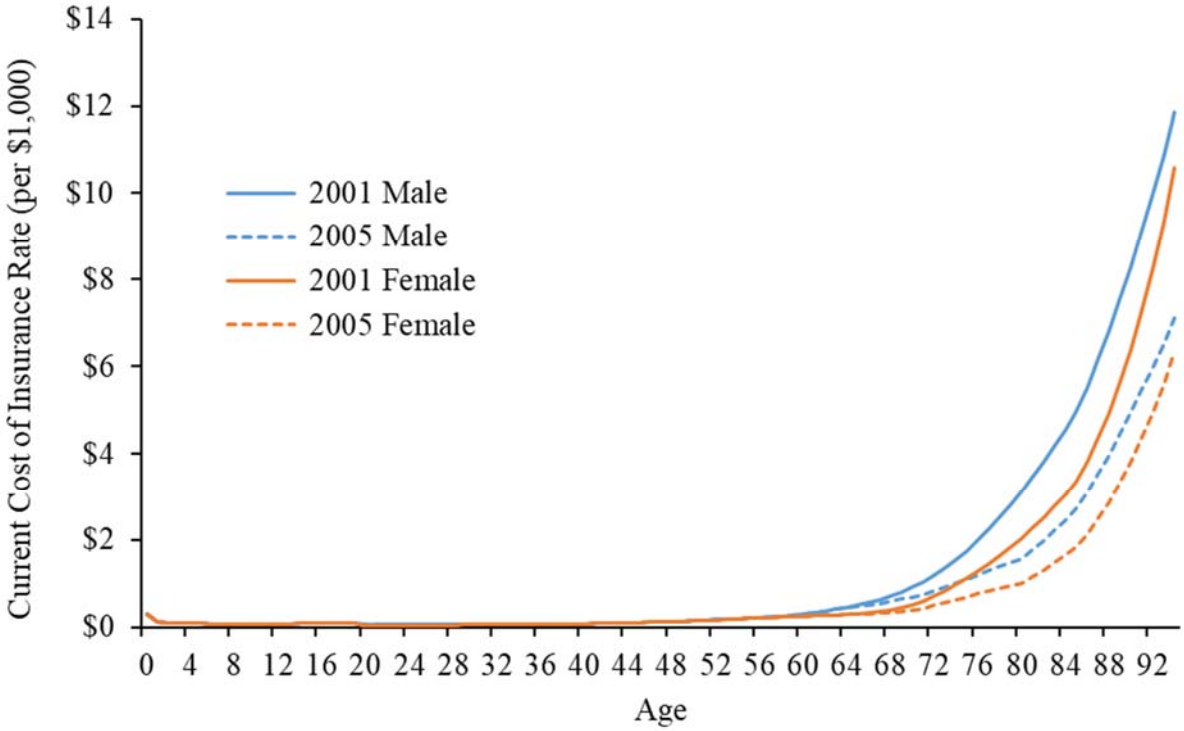


Figure 21. Current Cost of Insurance Rates 2001 v. 2005 – Preferred Plus Band 2

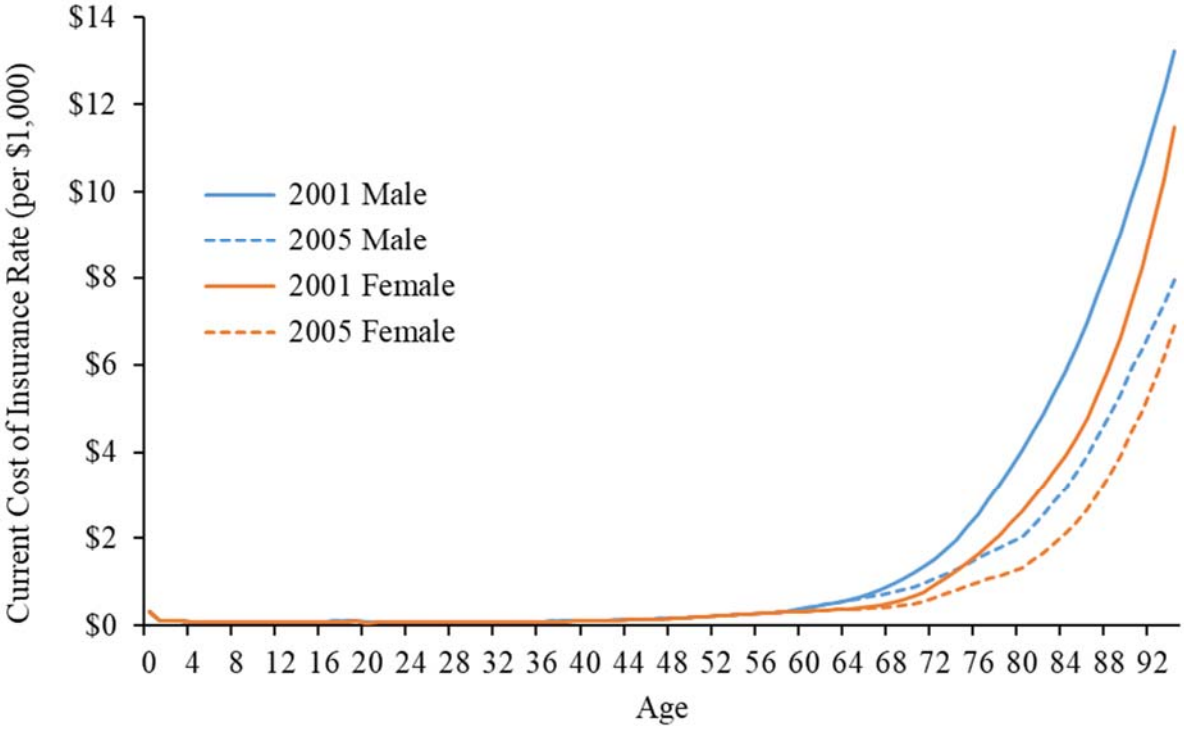


Figure 22. Current Cost of Insurance Rates 2001 v. 2005 – Preferred Band 2

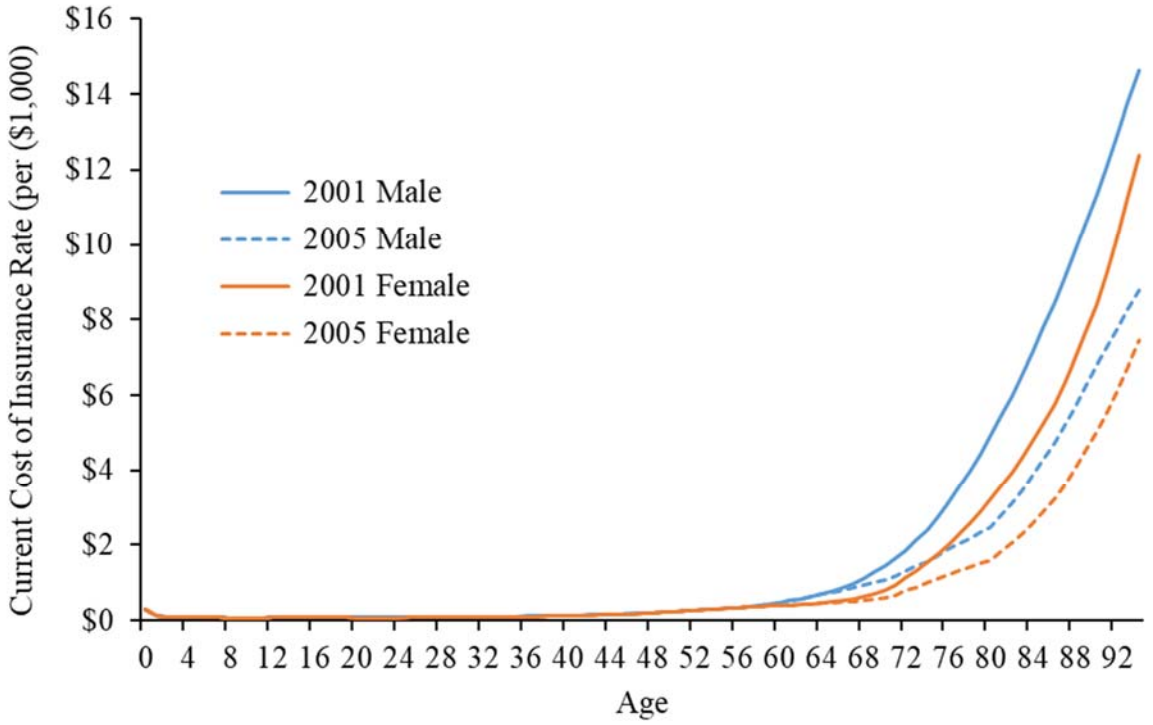


Figure 23. Current Cost of Insurance Rates 2001 v. 2005 – Standard Plus Band 2

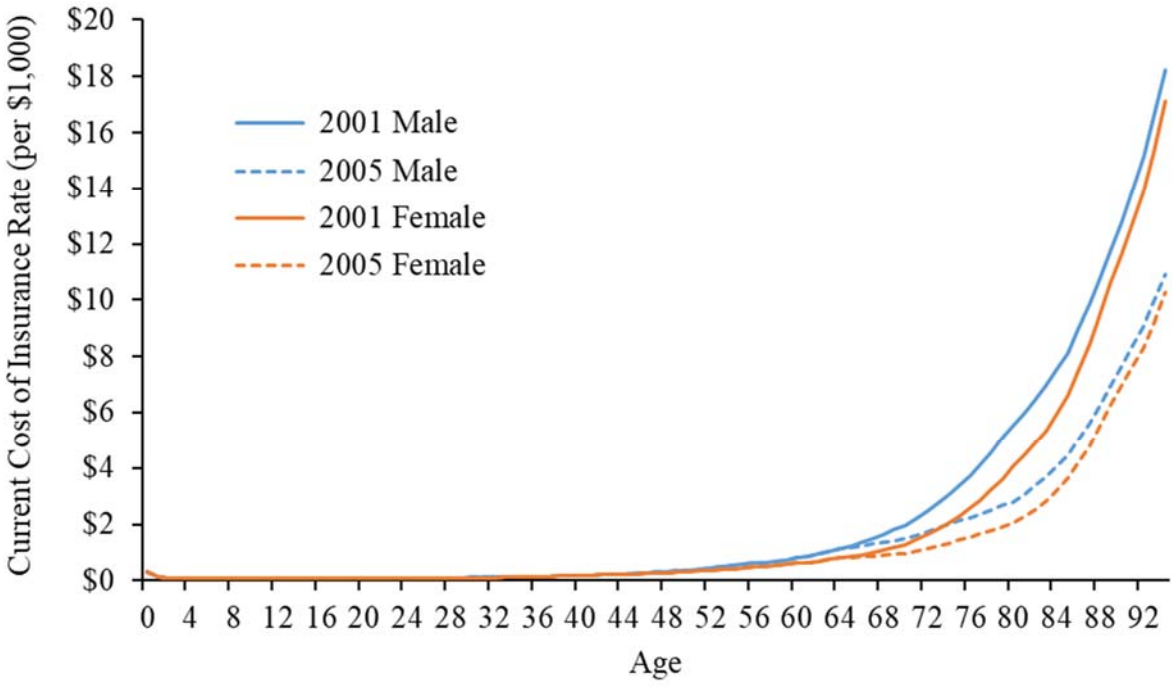
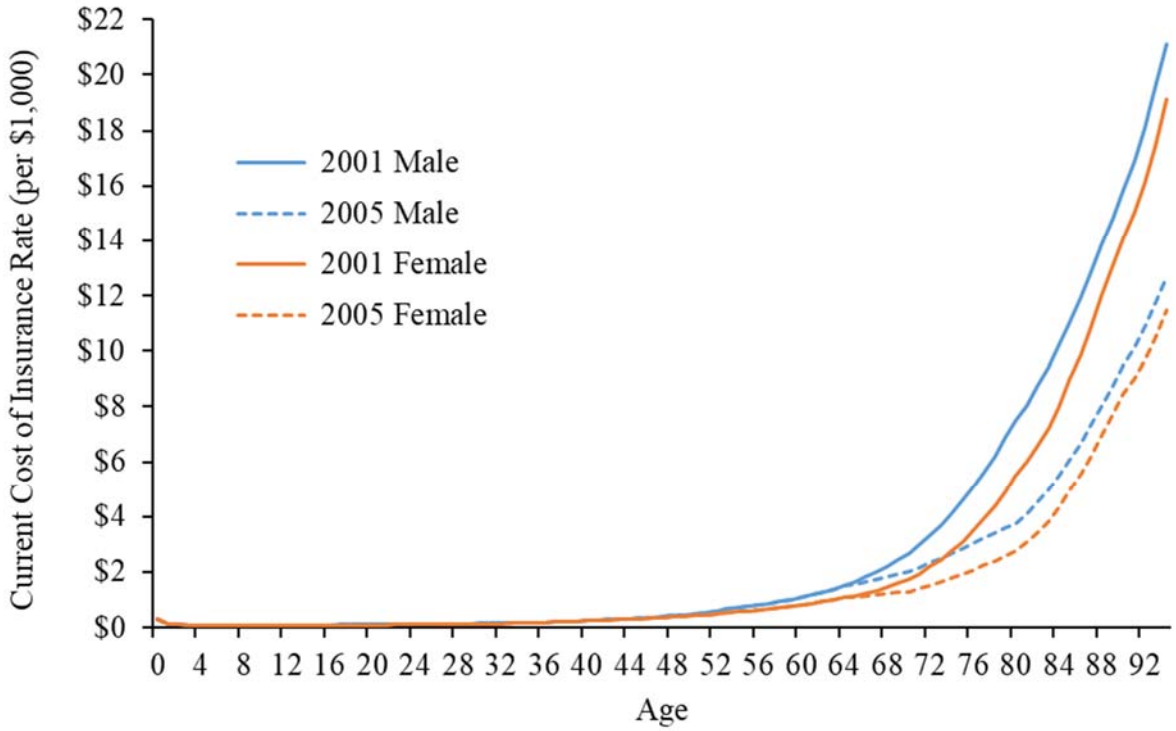


Figure 24. Current Cost of Insurance Rates 2001 v. 2005 – Standard Band 2



Executed at Provo, Utah

Craig Merrill

February 24, 2020

Craig Merrill

Date

EXHIBIT 1

CRAIG MERRILL – VITA

Brigham Young University • 640 TNRB • Provo, UT 84602
Phone: (801) 422-4782 • E-mail: Craig_Merrill@byu.edu

Education

Ph.D.	University of Pennsylvania, Insurance and Finance, 1994
M.A.	University of Pennsylvania, Insurance and Finance, 1992
B.A.	Brigham Young University, Economics, 1989 Minors in Statistics and Japanese

Academic Experience

2019 – Present	Chair, Department of Finance, BYU Marriott School
2007 – Present	Professor, Brigham Young University, Provo, UT
2007 – 2013	Director, Brigham Young University, Marriott MBA program
2000 – 2007	Associate Professor, Brigham Young University, Provo, UT
1993 – 2000	Assistant Professor, Brigham Young University, Provo, UT
1997	Visiting Professor, Georgia State University, Atlanta, GA
1991 – 1993	Research Assistant, University of Pennsylvania, Philadelphia, PA
1988 – 1989	Instructor, Brigham Young University, Provo, UT

Honors and Awards

Professorship, Second Mile Professor of Finance, 2014 – present

Marriott School Citizenship Award – 2014

Fellow, Wharton Financial Institutions Center, 2006 – present

Marriott School Teaching Excellence Award – 2008

Grant Taggart Fellow of Insurance, Risk Management and Financial Services, Brigham Young University, 1993 – 2008

Best Paper of 2002, *North American Actuarial Journal*

BYU Finance Society's Outstanding Professor Award for 2000 – 2001

Graham and Dodd Award of Excellence, presented by the Association for Investment Management and Research in recognition of an outstanding feature article in the *Financial Analysts Journal,* 1998

LECG Research Fellow, LECG, Inc. New York, NY, 1998

Kemper Foundation Grant, Brigham Young University, 1997

Huebner Foundation Fellowship, University of Pennsylvania, 1989 – 1993

Rodney L. White Center Grant For Financial Research, 1991 – 1992

Publications in Peer Review Journals

Final Demand for Structured Finance Securities, with Taylor D. Nadauld and Philip E. Strahan, *Management Science*, 2017.

Insurance Theory and Challenges Facing the Development of Microinsurance Markets, with James C. Brau and Kim Staking, *Journal of Developmental Entrepreneurship*, Vol 6(4), pp 411-440 (2011).

The Relationship Between Corporate Social Responsibility and Shareholder Value: An Empirical Test of the Risk Management Hypothesis, with Paul Godfrey and Jared Hansen, *Strategic Management Journal*, 30:425-445 (2009).

The U.S. Treasury Buyback Auctions: The Cost of Retiring Illiquid Bonds, with Bing Han and Francis Longstaff, *Journal of Finance*, Dec. 2007.

Risky Loss Distributions and Modelling the Loss Reserve Pay-out Tail, with J. David Cummins and James B. McDonald, *Review of Applied Economics*, Vol. 3, No. 1, 2007.

Real and Illusory Value Creation by Insurance Companies, with David F. Babbel, *Journal of Risk and Insurance*, March 2005. Lead article.

The Effect of Transaction Size on Off-the-Run Treasury Prices, with David Babbel, Mark Meyer, and Meiring de Villiers, *Journal of Financial and Quantitative Analysis*, September 2004.

Fair Value of Liabilities: The Financial Economics Perspective, with David Babbel and Jeremy Gold, *North American Actuarial Journal*, January 2002. Lead Article, Awarded best paper of 2002.

> This article was also published as Chapter 1 in *Asset and Liability Management Tools: A Handbook for Best Practice,* edited by Bernd Sherer, Risk Books, London, 2003.

A Note on the Solution to a Three-Factor Affine Term Structure Model, with Kabir Dutta, *Journal of Fixed Income*, December, 1999.

Economic Valuation Models for Insurers, with David F. Babbel, *North American Actuarial Journal*, July 1998. Lead Article.

Discussion of "Two Paradigms for the Market Value of Liabilities." *North American Actuarial Journal*, October 1997.

A Response to "Time Diversification and Option Pricing Theory: Another Perspective," with Steven Thorley, *Journal of Portfolio Management*, Summer 1997.

Default Risk and the Effective Duration of Bonds, with David F. Babbel and William Panning. *Financial Analysts Journal*, January / February 1997. Received a Graham and Dodd Award of Excellence.

> This article was translated and published in the *Security Analysts Journal of Japan,* October 1998, Vol. 36, No 10.

Interest-Rate Option Pricing Revisited, with David Babbel. *Journal of Futures Markets*, December 1996, Vol. 16, No. 8.

Teaching Interest Rate Contingent Claims Pricing, with David F. Babbel. A new pedagogical approach to teaching interest rate contingent claims pricing. *Journal of Financial Education*, Fall 1996. Lead article in peer review section of this journal.

Time Diversification: Perspectives from Option Pricing, with Steven Thorley. Using option pricing methodology to evaluate risk in equity investments for different investment horizons. *Financial Analysts Journal*, May/June 1996. Lead article.

Working Papers

Systemic Network Risk in a Generalized Event Study Model, with Richard Butler and Gene Lai.

Why did financial institutions sell RMBS at fire sale prices during the financial crisis?, with Taylor D. Nadauld, Rene M. Stulz, and Shane Sherlund.

Other Publications

(The following are not blind review publications. Any review is noted.)

Investing Your Lump Sum at Retirement, written with David F. Babbel, Wharton Financial Institutions Center, Policy Series, 2007.

Fair Value of Liabilities: The Financial Economics Perspective, written with David F. Babbel and Jeremy Gold, first chapter in *Asset and Liability Management Tools: A Handbook for Best Practice,* Risk Books, London, 2003.

The Bullet GIC as an Example, written with David Babbel and Jeremy Gold, *Risks and Rewards,* February, 2001.

Default Risk and Effective Duration, presented at the AIMR seminar, Frontiers in Credit-Risk Analysis: A Fixed-Income Conference, and published in a proceedings book, 2000.

The Ultimate Black Box, written with David Babbel and Algis Remeza, presented at a New York University, Salomon Center conference and printed as a chapter in *Fair Value of Insurance Business,* 2000.

Toward a Unified Valuation Model for Life Insurers, written with David Babbel and published in *Changes in the Life Insurance Industry: Efficiency, Technology and Risk Management,* Kluwer, Norwell, MA, 1999.

Valuing Interest-Sensitive Financial Instruments, a technical monograph written with David F. Babbel, Frank Fabozzi Publishers, 1996. (Reviewed by a panel of investments experts.) This monograph has been designated as required reading for the Associate of the Society of Actuaries designation exams.

Duration of Risky Bonds, with David Babbel and William Panning, presented at New York University, Salomon Center, and published as a chapter in *Financial Dynamics of the Insurance Industry,* Irwin, 1995. (Blind Conference Review)

> A slightly modified version of this paper was published as a working paper in the *Financial Sector Analysis Series,* World Bank, September, 1995.

Generating Stochastic Interest Rate Scenarios, invited presentation published in paper form in *The Record of the Society of Actuaries,* Vol. 21 No. 4, 1996.

Option Pricing Mathematics, invited presentation published in paper form in *The Record of the Society of Actuaries,* Vol. 21 No. 1, 1996.

Presentations and Seminars

Systemic Network Risk in a Generalized Event Study Model, Risk Theory Seminar, April 2019.

Why did financial institutions sell RMBS at fire sale prices during the financial crisis?, NBER and NYU, 2013. Also AFA, 2014.

The Annuity Puzzle, Default Risk, and Social Security, BYU-Park City Conference, 2012.

Optimal Decumulation: An Investment-Consumption Model for Retirees, with David Babbel and Jeffrey Humpherys, SIAM, 2012.

Insurance Theory and Challenges Facing the Development of Microinsurance Markets, with James Brau and Kim Staking, Microinsurance conference, Senegal, 2009.

Enterprise Risk Management, National Association of Corporate Directors Summit Conference, Deer Valley, Utah, 2009.

Financial Engineering and Insurance Product Design, Society of Actuaries national meeting, Denver, Colorado, 2009.

Life Insurance and Annuity Pricing: How Much Can Insurers Rely on Credit and Liquidity Risk Premiums?, Society of Actuaries national meeting, Denver, Colorado, 2009.

Asset/Liability Management for Insurers, KPMG/Wharton Executive Education seminar, Wharton School, Philadelphia, 2002-2008.

Quantitative Tools for Asset/Liability Management, Financial Risk Management Workshop, Milan, Italy, 2006.

Advanced Asset/Liability Management for Life Insurers, Society of Actuaries and Wharton School, Philadelphia, 2001.

Fair Value of Liabilities, Bowles Symposium, Georgia State University, Atlanta, 2001.

New Thinking at the Business Schools: Financial Valuation of Insurance Liabilities, presented at the investment actuaries symposium, 2000.

A 3+N-Factor Model of the Term Structure of Interest, with Closed-Form Solutions, with D. Babbel and A. Remeza, presented at the American Risk and Insurance Association annual meeting, 2000.

Financial Modeling Integration, panel presentation at the Society of Actuaries Annual Meeting in San Diego, 2000.

The Ultimate Black Box, written with David Babbel and Algis Remeza, presented at the New York University, Salomon Center conference in Fair Value of Insurance Business, 1999.

Economic Valuation of Insurance Liabilities, presented in a plenary session of the American Risk and Insurance Association annual meetings, Vancouver, BC, 1999.

Default Risk and Effective Duration, presented at Frontiers in Credit-Risk analysis: A Fixed-Income Conference and sponsored by the AIMR in Chicago, 1999.

Toward a Unified Valuation Model for Life Insurers, written with David Babbel and presented at the New York University, Salomon Center conference Changes in the Life Insurance Industry: Efficiency, Technology and Risk Management, 1998.

Financial Valuation of Insurance Liabilities, presented to the Academy of Actuaries task force on fair valuation of liabilities, New York, 1998.

Financial Risk Management, presented at the American Risk and Insurance Association meetings in San Diego, 1997. Plenary session.

Products Liability Loss Distributions and Liability Insurance Pricing, presented at University of Minnesota, faculty seminar, 1996.

Mathematics of Option Pricing, presented at the Society of Actuaries meetings in Orlando, 1996. This was a day-long extension to the presentation in Boston, 1995.

Generating Stochastic Interest Rate Scenarios, member of panel at the Society of Actuaries meetings in Boston, 1995.

Option Pricing Mathematics, presented at the Society of Actuaries meetings in New Orleans, 1995.

Duration of Risky Bonds, with David Babbel and William Panning, presented at New York University, Salomon Center, Financial Dynamics of the Insurance Industry, 1995.

Optimal Social Security Pension Benefits With Heterogeneous Incomes, with Paul D. Thistle, presented at the Southern Economic Association meeting, Orlando FL., 1994.

Heterogeneous Incomes and the Design of Social Security Programs, with Paul D. Thistle, presented at the American Risk and Insurance Association meetings, Washington D.C., 1992 and at a Georgia State University Faculty Seminar, 1994.

Moonlighting and Deductibles: A Market-based Solution to the Problem of Insurance Contract Purchase Non-Observability, presented at the American Risk and Insurance Association meetings, Washington D.C., 1992 and at a Brigham Young University, Faculty Seminar, 1993.

Areas of Interest

Research

Fixed income securities and derivatives

Asset-liability management

Applications of financial pricing to insurance liabilities

Teaching

Financial risk management and derivatives

Fixed income analysis

EXHIBIT 2

CRA Charles River Associates

Craig Merrill
Senior Consultant

PhD, Insurance and Finance
University of Pennsylvania

MA, Insurance and Finance
University of Pennsylvania

BA, Economics
Brigham Young University

Prior testimony of Professor Craig Merrill

- Submitted a report and was deposed in connection with In the Matter of Anthony J. Iorio, Foster K. Brown, and Betty Brown, Max Freifield, Ruth Scheffer, James Cummings, Beatrice Stafford, on behalf of themselves and all others similarly situated, v. Asset Marketing Systems, Inc.; Asset Marketing Systems Insurance Services, LLC; Seniors Only Financial; Preservation Financial and Insurance Services, Inc.; Michael Howard Botkin; Allianz Life Insurance Company of North America. I was asked by counsel for Allianz Life Insurance Company of North America (Allianz) to comment on issues relating to various deferred annuities. I was also asked to review and verify the expert reports of Professor Michael J. Barclay who died suddenly and, thus, was not available to testify. In addition, I was asked to respond to the reports submitted by opposing experts.
- Submitted a report, was deposed, and testified at trial in connection with Linda L. Mooney and Lieselotte W. Thorpe on behalf of themselves and all others similarly situated, v. Allianz Life Insurance Company of North America. I was asked by counsel for Allianz to comment on issues relating to various deferred annuities. In addition, I was asked to respond to the reports submitted by opposing experts. My testimony regarding lack of harm suffered by plaintiffs was accepted by the jury who found that plaintiffs suffered no harm despite finding liability regarding the past sales practices of the defendant.
- Submitted two declarations, a report, and was deposed in connection with Vida F. Negrete, as Conservator for Everett E. Ow, an individual, and on Behalf of All Other Similarly Situated Persons, v. Allianz Life Insurance Company of North America; and, Carolyn Y. Healy, on Behalf of Herself and All Others Similarly Situated, v. Allianz Life Insurance Company of North America. I was asked by counsel for Allianz to comment on the methodologies employed by Craig J. McCann in support of the Defendant's Objections and Motion to Exclude the Declaration of McCann.
- Was deposed in connection with Jeanette M. Peterman, Richard H. McCann, Jorge S. Javier, and Susan M. Vaughn, vs. North American Company for Life and Health Insurance, Sunil Sharma, Sandhya Sharma, Midland National Life Insurance Company, and Does 1-100. I was asked by counsel for North American to comment on analysis provided by Plaintiff's expert.

- Submitted a report and was deposed in connection with the Plan Administrator of Phones Plus Retirement Savings Plan, on behalf of itself and all others similarly situated, vs. The Hartford Financial Services Group, Inc., Hartford Life Insurance Company, and Neuberger Berman Management, Inc. I was asked by counsel for Hartford Life to analyze the nature and function of the payments mutual fund complexes often make to 401(k) service providers in the market for retirement plan services.
- Submitted a report and was deposed in connection with Janice Kennedy, individually, and on behalf of herself and all others similarly situated, vs. Jackson National Life Insurance Company. I was asked by counsel for Jackson National to comment on issues relating to various deferred annuities. In addition, I was asked to review and respond to reports provided by Plaintiff's experts.
- Submitted a report in connection with Daniel Duchardt, individually and on behalf of all other similarly situated, v. Midland National Life Insurance Company opposing certification of a proposed class alleging the wrongful calculation of annuity crediting rates. My report was cited favorably in the Judge's July 23, 2009 order denying class certification.
- Submitted a report in connection with EquiTrust Deferred Annuities Litigation. I was asked by counsel for EquiTrust to perform analysis and provide an overview of the various annuities. In addition, I was asked to review and respond to the report provided by Plaintiff's expert.
- Submitted two reports, a declaration, and was deposed in connection with National Western Life Insurance Deferred Annuities Litigation. I was asked by counsel for National Western to comment on issues relating to various deferred annuities. In addition, I was asked to review and respond to reports provided by Plaintiff's experts.
- Submitted two declarations in connection with Mai Nhia Thao, individually and on behalf of a class of others similarly situated, v. Midland National Life Insurance Company in opposition to motion and renewed motion to certify a proposed class.
- Submitted a declaration and was deposed in connection with Rosalie Vaccarino and David Lee Tegen, on behalf of themselves and all others similarly situated, v. Midland National Life Insurance Company in opposition to plaintiffs' motion to certify case as class action.
- Submitted a declaration and was deposed in the matter of Daniel Tabares and Rhodora Tabares et al v. Equitrust Life Insurance Company, supporting Equitrust's motion for summary adjudication.
- Submitted an additional declaration and in connection with Rosalie Vaccarino and David Lee Tegen, on behalf of themselves and all others similarly situated, v. Midland National Life Insurance Company in opposition to plaintiffs' renewed motion to certify case as class action and to exclude the testimony of plaintiffs' expert.
- Submitted a report and was deposed in connection with the arbitration between Ability Insurance Company and American Family Life Insurance Company regarding a reinsurance treaty covering long-term care insurance contracts. I was asked by counsel for Ability to review certain elements of the reinsurance contract focused on the management of the asset portfolio and respond to positions taken by American Family and its experts.

- Submitted a report and was deposed in connection with Frederick Rozo, individually and on behalf of all others similarly situated, v. Principal Life Insurance Company. I was asked by counsel for Principal Life Insurance Company to comment on issues relating to a fixed income product offered by Principal Life Insurance Company. In addition, I was asked to review and respond to the report provided by Plaintiff's expert.
- Submitted a report and was deposed in the matter of Todd Wolff v. Allianz Life Insurance Company of North America and Robert McGarvey, concerning features of a deferred annuity product. I was asked by counsel for Allianz Life to review and respond to the opinions of plaintiff's experts and fact expert witness.
- Submitted a report, was deposed and testified at arbitration in the matter of Franklin Raines v. Federal National Mortgage Association ("Fannie Mae"), concerning the decision made by Fannie Mae to stop Mr. Raines monthly lifetime retirement payment and replace it with a lump-sum settlement. This testimony included a discussion of the benefits of lifetime income as well as perspective on the cost to provide lifetime income versus the economic value it provides to an individual.

EXHIBIT 3

Documents Relied On

BATES Documents

1. Spegele/USAA Life 027902
2. Spegele/USAA Life 003791
3. Spegele/USAA Life 000584
4. Spegele/USAA Life 000786
5. Spegele/USAA Life 121519
6. Spegele/USAA Life 000001
7. Spegele/USAA Life 003580
8. Spegele/USAA Life 121518
9. Spegele/USAA Life 027969
10. Spegele/USAA Life 003930
11. Spegele/USAA Life 005216
12. Spegele/USAA Life 031246
13. Spegele/USAA Life 026419
14. Spegele/USAA Life 026423
15. Spegele/USAA Life 026427
16. Spegele/USAA Life 026434
17. Spegele/USAA Life 026435
18. Spegele/USAA Life 030428
19. Spegele/USAA Life 000083
20. Spegele/USAA Life 000095
21. Spegele/USAA Life 000087
22. Spegele/USAA Life 026541
23. Spegele/USAA Life 000091
24. Spegele/USAA Life 000075
25. Spegele/USAA Life 026553
26. Spegele/USAA Life 000103
27. Spegele/USAA Life 026561
28. Spegele/USAA Life 026565
29. Spegele/USAA Life 000099
30. Spegele/USAA Life 026573
31. Spegele/USAA Life 000079
32. Spegele/USAA Life 026581
33. Spegele/USAA Life 000071
34. Spegele/USAA Life 000181
35. Spegele/USAA Life 000127
36. Spegele/USAA Life 000185
37. Spegele/USAA Life 000191
38. Spegele/USAA Life 000135
39. Spegele/USAA Life 000197
40. Spegele/USAA Life 121520
41. Spegele/USAA Life 121493
42. Spegele/USAA Life 121492
43. Spegele_000093

Documents Relied On

Legal Documents

1. Complaint, Spegele v. USAA Life Insurance Company, filed September 29, 2010
2. Exhibit A to the Complaint, Spegele v. USAA Life Insurance Company, filed September 29, 2010
3. Supplemental Interrogatory Responses, filed August 19, 2019
4. Declaration and Report of Scott J. Witt, filed December 20, 2019
5. Deposition of Scott J. Witt, January 30, 2020

Literature

1. Moshe A. Milevsky, *The Calculus of Retirement Income, Financial Models for Pension Annuities and Life Insurance*, Cambridge University Press, 2006
2. "Final Demand for Structured Finance Securities," Craig B. Merrill, Taylor D. Nadauld, and Philip E. Strahan, *Management Science*, January 2019
3. George Rejda, *Principles of Risk Management and Insurance*, Fourth Edition

Websites

1. https://fred.stlouisfed.org/series/AAA
2. https://www.federalreserve.gov/datadownload/Choose.aspx?rel=H15